2006-05-01

Exercise Self-Efficacy, Stages of Exercise Change, Health Promotion Behaviors, and Physical Activity in Postmenopausal Hispanic Women

Pamela Wolfe Kohlbry PhD
University of San Diego

UNIVERSITY OF SAN DIEGO
Hahn School of Nursing and Health Science
DOCTOR OF PHILOSOPHY IN NURSING

EXERCISE SELF-EFFICACY, STAGES OF EXERCISE CHANGE, HEALTH PROMOTION BEHAVIORS, AND PHYSICAL ACTIVITY IN POSTMENOPAUSAL HISPANIC WOMEN

by

Pamela Wolfe Kohlbry

A dissertation presented to the

FACULTY OF THE HAHN SCHOOL OF NURSING AND HEALTH SCIENCE

UNIVERSITY OF SAN DIEGO

In partial fulfillment of the

requirements for the degree

DOCTOR OF PHILOSOPHY IN NURSING

May 2006

Dissertation Committee

Kathy James, DNSc, Chairperson

Diane Hatton, PhD

Mary Nies, PhD

Abstract

The purpose of this correlational research is to understand the relationships among the variables of exercise self-efficacy, stages of exercise change, health promotion behaviors, body mass index (BMI), health problems, and the level of physical activity in postmenopausal Hispanic women.

The significance of this study is to contribute research that enhances the understanding of the relationship of psychosocial and health promotion correlates and physical activity in postmenopausal Hispanic women. On a national level, this is important because Hispanic women make up one of the fastest growing minority populations and they experience the second highest level of obesity. This research is essential for knowledge on which to base interventions for health promotion and the prevention of debilitating health challenges caused by obesity. The theoretical significance of this research is the application of the Transtheoretical Model on stages of exercise change and testing the complementing constructs of Pender's Health Promotion model, including self-efficacy and health promoting behaviors.

A descriptive correlational design was used to examine the relationship among the variables. A sample of 121 participants was surveyed from clinical and community settings located in Southern California. A multivariate analysis was computed to explore the relative contribution of modifiable psychosocial correlates of exercise self-efficacy, stages of exercise change, health promotion behaviors, health problems and BMI with the level of physical activity.

The study population had a mean age of 57 years, was primarily born in Mexico (47.3%), obese (36.9%), and reported between one and six health problems. The findings from this research demonstrated statistically significant correlations between exercise self-efficacy, stages of exercise change, health promotion behaviors, and level of physical activity. Further, there was a significant inverse correlation of the study variables with health problems and BMI. The findings from this research will develop knowledge useful for the future strategic development of physical activity interventions and programs to facilitate healthy lifestyles with the inclusion of physical activity that are specific to postmenopausal Hispanic women.

DEDICATION

This journey of learning has been supported and encouraged by those nearest and dearest to me. I would like to dedicate this work to my husband, family and friends who have continued along with me as I have endeavored to complete this study. I dedicate this work to:

Chris Kohlbry, my husband whose encouragement and support has helped to me to accomplish this goal. My sons, Paul and Marc, who have been patient and interested in my work and of who I am so tremendously proud.

My friends Betty Green, Meg Jepsen, Jane Rapps, Kathy Clyne, and Lynn Popp who have been supportive and helped to keep me on track.

My sister, Cherie Hammer and her family who at just the right times supported me. A deep appreciation and a special dedication to my parents, Clarence and Merle Wolfe for their conviction in the value of research and discovery, their belief in me and the courage in never giving up on my dreams and faith to trust in the steps I have taken along the way.

ACKNOWLEDGEMENTS

It is with great appreciation that I acknowledge the many individuals who have helped to bring this work to fruition. I have learned that research such as this is only accomplished in consort with those who have gone before and with whom one is blessed to walk alongside. My unending gratitude to Dr. Kathy James, my dissertation chairperson, whose astute guidance, research knowledge, warm encouragement, and walks-on-the-beach discussions are treasured and most memorable of my learning experiences. To Dr. Diane Hatton who as my advisor and dissertation committee member provided continuous direction throughout my doctoral journey and whom I appreciate in her challenge and refinement of my ideas. I will be forever grateful to her for her encouragement to call Dr. Mary Nies. A special thank you to Dr. Mary Nies, my dissertation committee member at Stony Brook University, New York, whose delightful encouragement and tremendous research experience contributed in a significant way to the competition of this dissertation research. I am immensely grateful to Dr. Donna Agan, whose hours of data analysis, APA expertise, proofing, and marvelous support helped to make this research experience understandable, human, and real.

I am grateful to Dr. Sally Hardin, Dean for her challenge and wisdom. To Dr. Patricia Roth, Director of the Doctoral Program, thank you for all your graciousness. I am honored to acknowledge the professors, past and present, who have shared this learning journey with me. A special acknowledgment to Dr. Anita Hunter, Dr. Mary Jo Clark, Dr. Mary Rose Mueller, Dr. Linda Robinson, and Dr. Cynthia Connelly who have both challenged and help me. Finally, I would like to thank my classmates, especially Dorothy

Zirkle, Linda Hansen Kyle, and Tari Gilbert, for their peer support that contributed to this research..

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Chapter 1

Introduction

The primary goal of Healthy People 2010 is to increase quality and years of life (Centers for Disease Control & Prevention & President's Council on Physical Fitness & Sports, 2004). Physical activity is the number one leading health indicator to help advance this national goal. Increased physical activity is essential for health promotion and the prevention of debilitating health challenges caused by obesity and weight gain (Centers for Disease Control & Prevention & President's Council on Physical Fitness & Sports, 2004). The prevalence of being overweight, and in the extreme being obese, has been identified as an epidemic by the World Health Organization (National Institute of Diabetes and Digestive and Kidney Diseases, 2004; World Health Organization, 1997).

In the United States, the occurrence of overweight women and obesity is higher for minority women, especially African American and Hispanic women (National Institute of Diabetes and Digestive and Kidney Diseases, 2004). Being overweight, obese, and inactive compound health problems, especially for women, including increases in cardiovascular risk factors (e.g., hypercholesterolemia, dyslipidemia, hypertension, increased C-reactive protein levels), cardiovascular disease (e.g., coronary heart disease, stroke), diabetes risk (e.g., increased insulin resistance), type 2 diabetes mellitus (DM), osteoarthritis, breast cancer, gallbladder disease, colon cancer, and other cancers (Barinas-Mitchell, Cushman, Meilahn, Tracy, & Kuller, 2001; Dubnov,

Brzezinski, & Berry, 2003; Nies, Hepworth, Wallston, & Kershaw, 2001; Oster, Thompson, Edelsberg, Bird, & Colditz, 1999; Reaven, Lithell, & Landsberg, 1996; Simkin-Silverman & Wing, 2000). In 1996, a historic report by the Surgeon General on physical activity and health concluded that most of these health complications could be substantially reduced with moderate physical activity and directed a challenge to the nation (Centers for Disease Control & Prevention, 1996). The current Surgeon General, Vice Admiral Richard H. Carmona, MD, MPH, FACS, stated in an address in 2003 that 7 out of 10 Americans die from a chronic disease that was preventable by simply eating healthy, increasing physical activity, and avoiding smoking (Carmona, 2003).

In women, the incidence of obesity and weight gain significantly increases with each decade of life and, specifically, during the years surrounding menopause (Simkin-Silverman & Wing, 2000). This weight gain is further aggravated by decreased levels of activity and an increase in the sedentary lifestyle of menopausal women (Gold et al., 2000). Further, Hispanic women experience higher rates of obesity and being overweight as well as higher rates of inactivity when compared to other ethnic groups (Anderson, Franckowiak, Christmas, & Walston, 2001; Bolen, Rhodes, Bland, & Holtzman, 2000; Wilcox, Castro, King, Housemann, & Brownson, 2000). The duration of post-menopause, may constitute up to one-third of a women's lifespan. Furthermore, being obese and overweight, compounded by decreased activity, is prevalent in this period. Therefore, a postmenopausal Hispanic woman's risk for chronic debilitating health problems is significant.

Physical activity was consistently identified in research as a significant, modifiable factor that influenced weight and the prevention of comorbidities (Dubnov et

al., 2003; Emery, Schmid, Kahn, & Filozof, 1993). Kushi et al.'s (1997) research on postmenopausal women concluded that higher levels of physical activity were related to a decreased risk of death. Positive outcomes have been demonstrated from interventional research on physical activity (Lovejoy, Champagne, Smith, de Jonge, & Xie, 2001; Nies, Reisengerg, Chruscial, & Artibee, 2003; Nies & Kershaw, 2002; Simkin-Silverman, Wing, Boraz, & Kuller, 2003). Research on physical activity is vital because of the significant negative health outcomes of inactivity and a sedentary lifestyle. In addition, research is also imperative because of the significant positive outcomes in quality of life and mortality that accompany physical activity (Dubnov et al., 2003; Kushi et al., 1997; Robbins et al., 2001).

"The second goal of Healthy People 2010 is to eliminate health disparities among segments of the population, including differences that occur by gender, race or ethnicity, education or income, disability, geographic location, or sexual orientation" (Centers for Disease Control & Prevention & President's Council on Physical Fitness & Sports, 2004, p. 1). This goal is vital when considering that the Hispanic population has increased by 58% from 22.4 million in 1990 to 35.3 million in 2000, while the total U.S. population increased by only 13.2 % (U.S. Census Bureau, 2000). In 2000, 43.5 % of Hispanics lived in the western United States. Furthermore, Hispanics comprised 32% of San Diego's population. Research had indicated that Hispanic women were more likely to report higher rates of leisure time inactivity, sedentary lifestyle, as well as only poor to fair health status (Centers for Disease Control & Prevention, 2004; Shetterly, Baxter, Mason, & Hamman, 1996). With Hispanics being the fastest growing minority, increased obesity among minorities, and its comorbidities becoming a national health problem, the

modifiable factor of physical activity is a target area that may help to ameliorate the problem of obesity. Research about modifiable factors affecting physical activity is warranted in meeting the two major goals of Healthy People 2010. Although studies on physical activity in the Hispanic population have examined the effect of socioeconomic status and other demographic factors, there is limited research addressing the modifiable psychosocial correlates of physical activity (Elder et al., 1998; Sternfeld, Ainsworth, & Quesenberry, 1999). In particular, there has been insufficient research on the modifiable psychosocial variables of exercise self-efficacy, stages of exercise change, and health promotion behaviors with levels of physical activity in Hispanic postmenopausal women.

Statement of the Problem

In the 2002 report on the State of Aging and Health in America, 70% of the physical decline that occurred during aging was related to modifiable factors, including physical inactivity (Merck Institute of Aging & Health & Gerontological Society of America, 2002). Results from qualitative and quantitative research suggested that increased physical activity was associated with significant physical and psychosocial benefits (Dunn et al., 1999; Juarbe, Turok, & Perez-Stable, 2002; Marquez, McAuley, & Overman, 2004). In spite of the recognized positive health outcomes of physical activity, 43% of women, and 54% of Hispanics were considered inactive (Centers for Disease Control & Prevention & President's Council on Physical Fitness & Sports, 2004). The negative health outcomes of being obese and overweight were typically related to physical inactivity which was a significant modifiable risk factor (Dubnov et al., 2003).

Research is needed to understand the relationship of psychosocial factors associated with physical activity. Furthermore, understanding these factors, which affect

health promotion behaviors, will facilitate efforts and programs directed to promote physical activity. These efforts will help to ameliorate the problem of obesity and being overweight in postmenopausal Hispanic women and promote health.

From a health promotion perspective, maintenance of regular physical activity is dependent on the sources of social and personal motivation related to self-efficacy and stages of exercise change (Pender, Murdaugh, & Parsons, 2002). The theories on determinants of motivation have their origin in social psychology. Limited research has been done on the determinants of self-efficacy and stages of exercise change in relationship to physical activity specific to Hispanic women. While studies looked at groups of minority women, specific attention on the large and growing Hispanic population is limited. This population has higher rates of obesity and weight gain in addition to increased comorbidities as compared to other minorities.

Significance of the Study

This study is significant because it will contribute knowledge that addresses the health problems from physical inactivity, directly related to being overweight and obese. This knowledge will be useful to generate future development of physical activity interventions for Hispanic women. Because the efforts toward increasing physical activity in this population are multidisciplinary, the findings from this study in the arena of psychosocial correlates, health promotion, and physical activity will contribute to the multidisciplinary approach of programs promoting physical activity and health. Understanding the relationship of exercise self-efficacy, stages of exercise change, and health promotion behaviors in this population gives attention to developing the direction of health promotion programs and teaching in aspects of physical activity specifically for

postmenopausal Hispanic women. Further, this knowledge may help to improve rates of participation in physical activity.

Purpose of the Study

In an effort to attend to the objectives of Healthy People 2010 the purpose of this research is to understand the relationships among correlates of exercise self-efficacy, stages of exercise behavior, health promotion behaviors, health problems, body mass index (BMI) and level of physical activity in postmenopausal Hispanic women. The findings from this research will contribute to knowledge that will be useful for strategic development of interventions and programs to facilitate health promotion with the inclusion of physical activity for postmenopausal Hispanic women.

Research Proposal: Aims

The two aims of this study are: (a) to examine the relationship among the variables of exercise self-efficacy, stages of exercise change, and health promotion behaviors, with the level of physical activity in postmenopausal Hispanic women; and (b) to explore the relationship among exercise self-efficacy, stages of exercise change, health promotion behaviors, the level of physical activity, health problems and BMI in postmenopausal Hispanic women.

Specific Research Questions

1. Is there a significant relationship among the variables of exercise self-efficacy, stages of exercise change, health promotion behaviors, and the level of physical activity in postmenopausal Hispanic women?
2. Is there a significant inverse relationship among the variables of exercise self-efficacy, stages of exercise change, health promotion behaviors, the level of

physical activity, and health problems and BMI in postmenopausal Hispanic women?

Definition of Terms

Key terms used in this research are conceptually and operationally defined in this section.

Hispanic and Latina Participants

Conceptual definition. The U.S. Census Bureau's Office of Management and Budget had defined Hispanic or Latino as a person of Cuban, Mexican, Puerto Rican, South American, Central American, or other Spanish culture or origin regardless of race (U.S. Census Bureau, 2000). In the United States, the term Hispanic has not been specific to a homogenous group, but instead has been characterized by individuals from geographic origins including Mexico, Central America, the Caribbean, and South America residing in the United States. (Hulme et al., 2003). Unique to the diversity of Hispanics was ethnicity, race, country of origin, socioeconomic status, politics, Spanish linguistic variations, and level of acculturation. Notably, the terms Latino and Hispanic have often been used interchangeably in reference to individuals who immigrated or could trace their ancestry from a Spanish-speaking Latin American country, the Caribbean, Cuba, Puerto Rico, or Spain (Hayes-Bautista, 1980, 1987; Marquez et al., 2004). In the literature review, the word Hispanic or Latina that the author used is reflected.

The term Latina is used in research and literature to describe Hispanic women. Latinas are typically women who live in the U.S. and have immigrated or have ancestors in Mexico, Baja California, or Central America. While both terms, Latino and Hispanic,

are used in various literature, the Hispanic identifier has been used more consistently in the U.S. Census and major health research (e.g., Hispanic Health and Nutrition Examination Survey; (Trevino, 1987). Although there is debate as to the official use of the terms Hispanic or Latino, for this study the Hispanic identifier was used. Participants had the opportunity within the demographic questionnaire to identify their country of origin.

Operational definition. In this research, the word Hispanic was used in its broad definition, including individuals who self-reported as Latina, Cuban, Mexican, Puerto Rican, South American, Central American, or other Spanish culture or origin regardless of race. The term Hispanic was self-reported.

Exercise Self-efficacy

Conceptual definition. Self-efficacy, a salient predictor of health behavior change and maintenance, has been defined as one's perception of one's ability to achieve at a particular level when performing a particular behavior. One's confidence in his or her ability has been soundly related to one's actual ability to perform a behavior (Bandura, 1997; Marcus, Selby, Niaura, & Rossi, 1992). Using Bandura's Theory of Self-efficacy, Marcus, Selby et al. developed the Exercise Self-Efficacy Questionnaire to measure exercise self-efficacy. Self-efficacy was a central construct of Pender's Health Promotion Model, as it motivated health promoting behaviors and determined the level of commitment or persistence in pursuing a plan of action (Pender et al., 2002).

Operational definition. In this research, the individual's self-efficacy related to exercise was examined. Exercise self-efficacy was operationally defined in this study using the Exercise Self-Efficacy Questionnaire (ESE) developed by Marcus, Rossi,

Selby, Niaura, & Abrams (1992). The questionnaire had five items with corresponding Likert scale responses (see Appendix A).

Stages of Exercise Change

Conceptual definition. The Transtheoretical Model (TM) developed by Prochaska, DiClemente, and Norcross (1992) theorized that individuals negotiate five stages of behavioral change. Marcus and Simkin (1993; 1994) further developed the model and applied the stages of change for individuals in relationship to exercise. The five stages identified in the model were precontemplation, contemplation, preparation, action, and maintenance. Precontemplation was when there was no intention to change behavior. Contemplation occurred when people were aware that there was a problem and were thinking about overcoming it, but had not made a commitment to action. Preparation combined the intention and some behavioral, minor modifications. In the action stage, individuals were more committed to modify their behavior, experiences, or environment to overcome the problem. In maintenance, the focus was on relapse prevention and continuation of change. The model helped to explain the different phases involved in acquisition and maintenance of a behavior (Marcus, Selby et al., 1992). From research, TM has been generalized to exercise behaviors as well as other health behavior changes (Marcus & Simkin, 1993). Several studies have begun to address stages of change and correlates of physical activity of Hispanic women (Bull, Eyler, King, & Brownson, 2001; Heesch, Brown, & Blanton, 2000; Suminski & Petosa, 2002).

Operational definition. The operationalized definition of stages of exercise change was the Stages of Exercise Behavior Questionnaire (SEC) developed by Marcus and Simkin (1993). The questionnaire was a five item, yes or no response, scored with an

algorithm (see Appendix B). The measure of stages of exercise behavior was developed and used to understand what stage individuals were in when considering physical activity behaviors.

Health Promotion Behaviors

Conceptual definition. Health promotion behaviors were factors of a healthy lifestyle as articulated in the Health Promotion Model (HPM). According to Pender et al.(2002), biopsychosocial processes that motivated individuals to engage in behaviors that were directed towards improving health influenced these behaviors. Health promoting behaviors were behavioral outcomes (e.g., engaging in physical activity). Physical activity was exemplified by the incorporation of short periods of moderate activity into daily living. Sedentary and lack of leisure time activity revealed higher levels of physical inactivity. The Health Promoting Lifestyle Profile II examined a variety of health promoting behaviors including physical activity.

Operational definition. Health promoting behaviors were operationalized by using the Health Promoting Lifestyle Profile II (HPLPII) developed by Walker, Sechrist, and Pender (1987). The 52-item questionnaire was a Likert-scale survey of health promotion behaviors including physical activity, stress management, spiritual growth, health responsibility, interpersonal relations, and nutrition (see Appendix C). The HPLPII is based on the Health Promotion Model by Pender (1982; 1996; Pender et al., 2002).

Physical Activity

Conceptual definition. According to Conn (1998)Physical activity included tasks that required physical movement (e.g., vacuuming, walking up stairs, grocery shopping; . The Centers for Disease Control (CDC) recommended "increased proportion of adults

who engage regularly, preferable daily, in moderate physical activity for at least 30 minutes" to promote a more healthy lifestyle (Centers for Disease Control & Prevention & President's Council on Physical Fitness & Sports, 2004, p. 3; Eyler et al., 1998; Pender et al., 2002) . Exercise was defined by planned, structured, and performed physical activity for the purpose of increasing fitness whereas physical activity includes any movement produced by the skeletal muscles that result in energy expenditure (Eyler et al., 1998; Pender et al., 2002). The operational definition included exercise as a form of physical activity; however, physical activity was not limited to planned activity for fitness.

Operational definition. Physical activity and exercise were operationalized in this research with the International Physical Activity Questionnaire (IPAQ; International Physical Questionnaire Committee, 2004). The seven-item questionnaire was the short version and measured three specific types of activity, walking, moderate-intensity activities, and vigorous intensity activity, along with frequency and duration. In an endeavor to develop a valid and reliable physical activity questionnaire, an international collaborative effort by physical activity assessment experts began in 1996 at the World Health Organization meeting in Geneva. The IPAQ was developed to respond to a global demand for a comparable and valid measure of physical activity within and between countries (see Appendix D).

Body Mass Index (BMI)

Conceptual definition. The research evidence supported the use of BMI for assessing weight risk because it was a more accurate measure of total body fat compared with the assessment of body weight alone (National Institutes of Health, 2004). Further,

research by Lawlor, Bedrod, & Ebrahim (2002) demonstrated that self-reported and measured weight were highly correlated, supporting the use of self-reported data (see Appendix E).

Operational definition. To calculate BMI, the researcher multiplied the individual's weight (in pounds) by 703, then divided by the height (in inches) squared. This approximated BMI in kilograms per meter squared (kg/m^2). Height and weight were self-reported on the demographic questionnaire. The CDC BMI scale was used for categorizing BMI (Centers for Disease Control & Prevention, 2006). This scale identified BMI and weight status, as shown in Figure 1.

BMI	Weight Status
Below 18.5	Underweight
18.5 – 24.9	Normal
25.0 – 29.9	Overweight
30.0 and Above	Obese

Figure 1. The BMI scale.

Health Problems

Conceptual definition. For women, the combination of being overweight or obese and being physically inactive compounds health problems, including increased cardiovascular risk factors (e.g., hypercholesterolemia, dyslipidemia, hypertension, increased C-reactive protein levels), cardiovascular disease (e.g., coronary heart disease, stroke), diabetes risk (increased insulin resistance), type 2 diabetes mellitus (DM), osteoarthritis, breast cancer, gallbladder disease, colon cancer, and other cancers.

Operational definition. Health problems were self-identified on the demographic questionnaire. These problems included number of health problems and self-identified health problems (e.g., hypertension), diabetes, heart problems (e.g., high cholesterol, high triglycerides, heart attack), gallbladder disease, joint or mobility problems, and cancer (see Appendix E).

Menopause

Operational definition. Although there is no consensus regarding the *endpoint* for the period of menopause, 6 months post last menstrual bleed has been considered endocrinologically correct (Rousseau, 1998). Therefore, in this study menopause was operationally defined as 6 months post last menstrual period.

Conceptual Framework

Several theoretical models were associated with the study of physical activity as a health behavior and with health behavior change. Considered an eclectic approach, the theoretical model informing this study was the TM, specifically stages of change, Pender's HPM (see Figure 2), and the self-efficacy and health promoting behaviors related to physical activity (Bandura, 1997; Marcus & Simkin, 1993; Pender, 1996; Prochaska et al., 1992).

In the first framework of the TM model, stages of behavioral change was developed in relation to physical activity (Marcus, Rossi et al., 1992; Prochaska et al., 1992). The TM integrated constructs from social learning theory and decisional balance theory (Sallis & Owen, 1999). The decisional balance theory that identified the individual's evaluations of the *pros and cons* of a behavior were correlated to behavior change. The perceptions of the pros and cons varied at each stage of the change process

(Marcus & Simkin, 1994). Self-efficacy, developed from social learning theory, contributed to the process to determine the stage of readiness for change as an individual approached a new challenge, such as incorporating physical activity into the lifestyle (Bull et al., 2001).

The stages of change identified the steps through which individuals progressed as they made changes and the process of change described the strategies individuals used to make the changes (Sallis & Owen, 1999). The stages were characterized by *readiness* to change, which were affected by the individuals intention and behavior (Marshall & Biddle, 2001). Exercise self-efficacy affected readiness to change, which in turn was important for initiating and maintaining a pattern of regular physical activity. Studies have demonstrated a positive relationship between exercise self-efficacy and stages of change.

The second framework, HPM, incorporated social cognitive theory and concepts of individual characteristics, behavior specific cognitions, and behavioral outcomes on health promoting behaviors, including physical activity (Pender et al., 2002). The behavioral outcome of the model was the variable of health promoting behavior. Health-promoting behaviors, when integrated into a healthy lifestyle, theoretically created improved health and better quality of life (Pender et al., 2002).

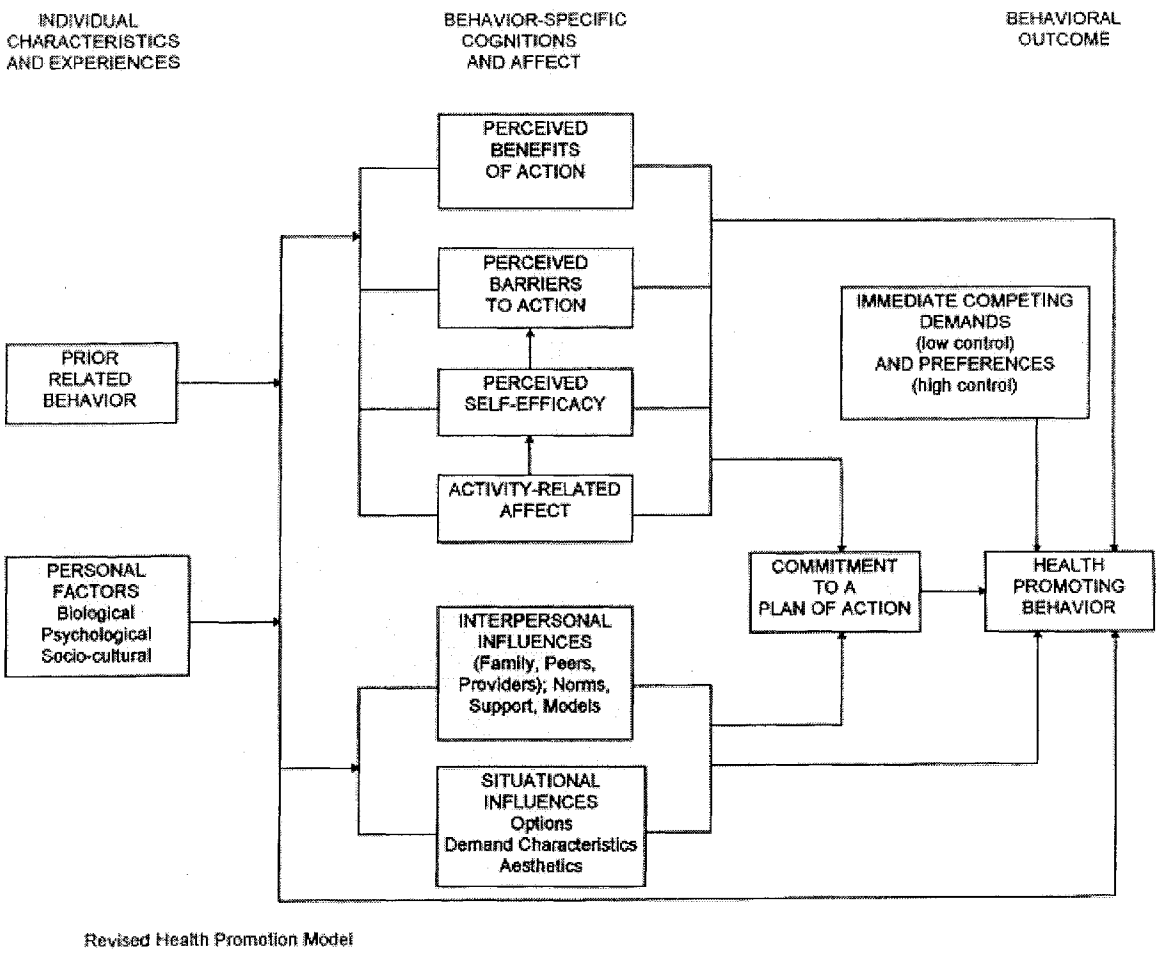

Figure 2. *Pender's Health Promotion Model.*

Pender's model had the constructs of social cognitive theory, including Bandura's elements of self-efficacy and outcome expectancy theory that helped to frame decision making of health behaviors, including physical activity (Allison & Keller, 2004; Bandura, 1997; Sallis & Owen, 1999). Exercise self-efficacy encompassed the perceptions of physical fitness performance and perceptions about controlling the choice to be physically active (Johnson et al., 2000). In addition, self-efficacy was considered a personal factor within the large ecological model of factors that influenced physical activity (Eyler, Wilcox et al., 2002; Johnson et al., 2000).

These models have been used individually and in combination to explore multiple facets of physical activity in women (Marcus, Selby et al., 1992). The factors these theories and models bring must be considered when conducting research on physical activity. In combination, they enhance the perspective for research and bring depth to the understanding of how to incorporate physical activity in a society that is becoming dangerously sedentary and inactive (National Institute of Diabetes & Digestive & Kidney Diseases, 2004). The combination of the models is displayed in Figure 3.

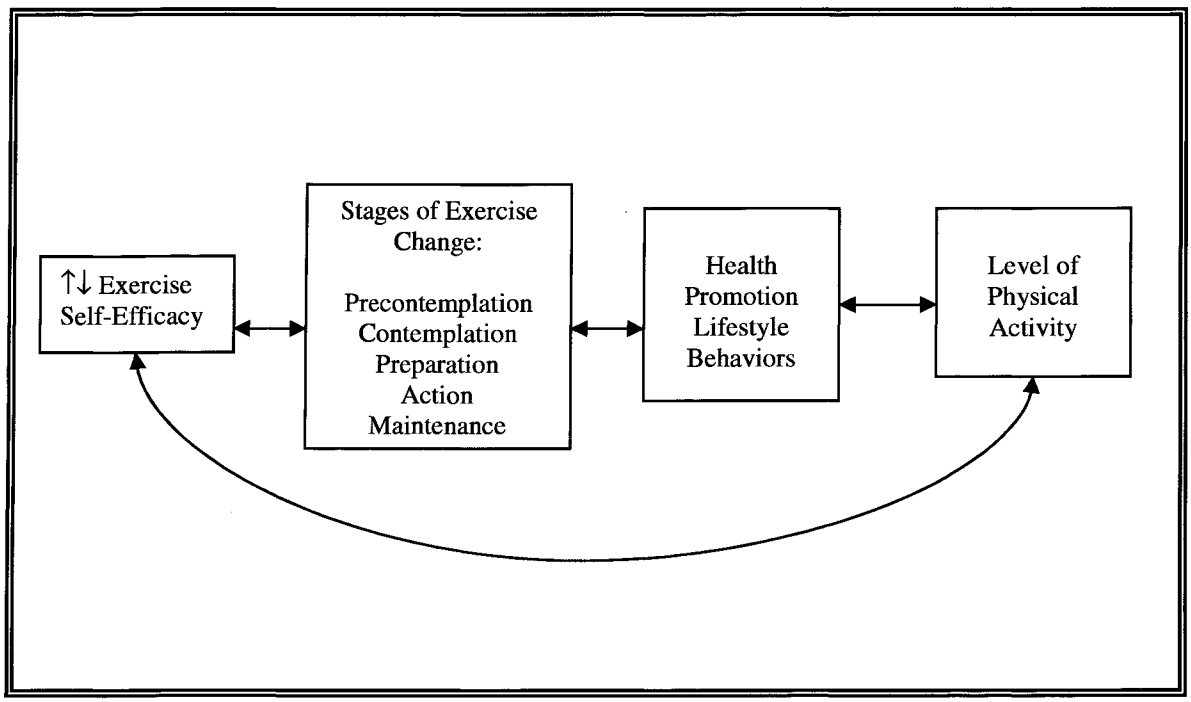

Figure 3. *Transtheoretical model constructs and health promotion constructs*

Summary

This chapter identified the problem and significance of studying the modifiable correlates of physical activity in postmenopausal Hispanic women. The conceptual framework for this study is a combination of the work of Marcus and Simkin's (1993) TM of change and Pender's HPM (2002). The conceptual and operational definitions of terms were presented. The findings from this research would enable an interdisciplinary approach to help develop strategic interventions and programs to facilitate healthy lifestyles with the inclusion of physical activity that are culturally specific and appropriate for postmenopausal Hispanic women.

Chapter 2

Literature Review

The purpose of this chapter is to review and critique literature focused on physical activity research applicable to Hispanic women. It gives a comprehensive overview of the current state of research on Hispanic women and the variables that influence physical activity. This chapter is divided into three sections. The first section explains the method of the literature review. The second section examines the context variables related to physical activity in Hispanic women, including benefits and barriers, correlates of sedentary and leisure time activities, and correlates of socioeconomic and demographic information related to physical activity. The third section analyzes and synthesizes the literature on the variables specific to this study. Research addressing the variables in this study, including exercise self-efficacy, stages of exercise change, and health promotion behaviors are examined along with any underlying theory.

Method of Literature Review

A comprehensive literature search strategy was developed in an effort to discover valuable work and significant research in the area of Hispanic women and physical activity (Conn, Isaramalai et al., 2003). The search combined terms of Hispanic women, physical activity, and exercise. The literature search was conducted on MEDLINE, CINAHL, ERIC, Ageline, Sport Discus, PsychoInfo, and Sociological Abstracts. After reviewing the literature, a journal hand search was made from the reference lists for works with significant or applicable results. In addition, author searches were done and further research articles were generated. Several university websites were reviewed to identify other significant research (San Diego State University, 2004; Stony Brook Health

Sciences Center, 2004; University of Illinois Urbana, 2004; University of Michigan, 2004).

A variety of research methodologies were accessed including qualitative, quantitative, interventional, experimental, and cross sectional methods. The use of EndNote, a bibliographic software package, was useful to avoid duplication (Thomson, 2004). Abstracts and complete references were downloaded into the EndNote library. The research strategy was not limited to peer review journals. Literature searches, papers, dissertations, and research were analyzed from different disciplines and through diverse journals.

A strategic matrix method, developed by Judith Garrard (1999), was utilized to organize the information. All articles were chronologically listed into the matrix (see Appendix F).

Context Variables Related to Physical Activity

The literature on psychosocial correlates of barriers and benefits to physical activity, sedentary lifestyle behaviors, and problems identified with the assessment of physical activity are discussed in this section. These contextual variables, while not the actual variables studied in this research project, do have an influence when exploring physical activity and the population of Hispanic women. Therefore, the contextual variables warrant attention.

Benefits and Barriers

Research on benefits and barriers to physical activity in Hispanic women identified the barriers that keep Hispanic women from physical activity and the facilitators that enhanced physical activity. Both qualitative and quantitative researchers

explored these variables on the level of individual perceptions and community structures. In research on the individual barriers for Hispanic women, examples identified family care giving responsibilities and role conflict. Examples of community barriers were poor lighting for walking or lack of access to safe areas in which they could participate in physical activity. Table 1 presents a more complete listing of psychosocial correlates of benefits and barriers, along with their references.

Benefits and barriers were a key construct in the Health Promotion Model. Benefits and barriers were the behavior-specific cognition that influenced a commitment to a plan of action towards a health promoting behavior. Benefits and barriers were affected by self-efficacy as well as individual characteristics and experiences.

Table 1

References and Psychosocial Correlates of Benefits and Barriers

Reference	BARRIERS Environmental: safety, dogs, lighted sidewalks, access	BARRIERS Psychological: Role, lack of social support, self-esteem	BARRIERS Demographic: age, caregiver, time; cost, health concerns	BENEFITS/FACILITATORS Psychological: role, social support, self-esteem, enhanced well being, culturally directed, health
Eyler et al. (1998)	**	**	**	**
Eyler et al. (1999)	**	**	**	**
Heesch et al. (2000)	**	**	**	
King et al. (2000)	**	**	**	
Melillo et al. (2001)			**	**
Evenson, Sarmiento, Macon, Tawney & Ammerman (2002)	**	**	**	**
Eyler, Matson-Koffman et al. (2002a, 2002b)	**	**	**	**
Juarbe et al. (2002)	**	**	**	**
Amesty (2003)	**	**	**	**
Evenson, Eyler, Wilcox & Thompson (2003)	**	**	**	**
Masse & Anderson (2003)	*	*	**	*
Vaughn (2004)	**	**	**	**

** Specific research results listed. * Summary results only.

Qualitative research on Hispanic women was found in studies that were both multiethnic as well as study samples that were limited to Hispanic or Latino participants. The more current research on Hispanics was focused on the Latina population. The qualitative research on correlates of Hispanic women described patterns of barriers and benefits to physical activity (Evenson, Sarmiento, Macon, Tawney, & Ammerman, 2002; Eyler et al., 1998; Eyler, Matson-Koffman et al., 2002a, 2002b; Juarbe et al., 2002; Melillo et al., 2001; Vaughn, 2004).

The initial qualitative work by Eyler et al. (1998) included 10 focus groups of women over 40 years of age from Hispanic, Filipino, Chinese, and American Indian minorities. While there were multiple groups of 8-10 participants, there was only one Hispanic group and the age range might not have included postmenopausal women. This limitation was noted in the study with reference to postmenopausal Hispanic women. The research effectively described personal and environmental barriers to physical activity. Personal barriers were twice as likely to be mentioned as environmental barriers. Personal barriers (e.g., lack of time, motivation, social network, self-esteem) were identified. Personal barriers were related to gender and cultural issues, such as care giving, family commitments, and appearance concerns. Age and health concerns were barriers, especially those with chronic conditions. Environmental barriers (e.g., lack of access due to cost, safety concerns due to traffic, dogs, people) were related to the effect of living in rural and urban conditions. Cultural issues influenced environmental barriers as well. For example, accessible programs were not considered available to the participants of the study because they were not culturally sensitive. Cost was a barrier mentioned in all groups. Most significantly, all the identified barriers to participating in physical activity were modifiable.

In addition to the research outcomes of barriers and facilitators, the study's focus groups also revealed a variety of interpretations about the terms physical activity and exercise as well as cultural issues. A definition of physical activity was created as women recognized examples of physical activity that they already were doing in their daily activities. Physical activity examples that the focus groups identified were housework, workday activities, walking, and dancing, which was a favorite physical activity.

Research revealed participants did not know that physical activity could include activities such as vigorous housework or brisk walking (Eyler et al., 1998). This may have influenced the findings in that participants did not see themselves as exercisers but they did meet the CDC and American College of Sports Medicine (ACSM) recommendations for adults to accrue at least 30 minutes of moderate-intensity activity most days of the week.

Melillo et al.(2001) conducted qualitative nursing research to identify perceptions of older Latino adults regarding physical fitness, physical activity, and exercise. The cultural findings of terminology issues for exercise and physical activity, the barriers of age, lack of self esteem (e.g., fear of inappropriateness), and health concerns, as well as the facilitators of social support and culturally sensitive programs resonated and supported the earlier work of Eyler et al (1998). Exercise and physical activity were perceived as interchangeable terms. *Fitness* was considered positive by the participants but *exercise* created health concerns, including the possibility that exercise could make a health condition worse (Melillo et al., 2001). Melillo et al. made the important point that nurses might be the cultural connection for older Hispanics in utilizing community resources. Nurses had the potential to create programs and links that facilitated change with regard to the modifiable factors related to physical activity for Hispanic women.

Extensive qualitative research was undertaken by Eyler et al. (2002a; 2002b) and Evenson et al. (2002) to identify environmental, policy, and cultural factors that influenced physical activity in minority women 20-50 years of age. While the study by Eyler et al. (2002a) included 42 different focus groups made up of White, Asian, Latina, American Indian, and African American women from various areas in the United States,

Evenson et al. (2002) described the results among Latina immigrants gathered from six focus groups in North Carolina (n = 49) with an average age of 32 years. A limitation of the research was the lack of study on women over age 50 including postmenopausal women (Eyler, Matson-Koffman et al., 2002a). These findings echo the previous research by Eyler et al. (1998) and Melillo et al. (2001). In contrast, the unique findings of the research conducted and analyzed by Eyler et al. (2002a) and Evenson et al. (2002) were in-depth descriptions of the barrier factors and the sociocultural and environmental policy interventions to facilitate physical activity recommended by the participants.

Qualitative research by Juarbe et al. (2002) specifically addressed the social and culturally-specific barriers and benefits to physical activity among Latina women aged 40-79 years (n = 143). One limitation was the use of the 7-day Physical Activity Recall Questionnaire. Eason, Masse, Kelder, and Tortolero (2002) found that the 7-day Activity Recall Questionnaire needed to be used longer than 7 days for valid data to be collected on Hispanic participants. The outcomes of the study provided data about the modifiable factors that influenced Hispanic women's participation in physical activity. The barriers identified were similar to those mentioned in previous research by Juarbe et al.. One unique outcome was that those barriers did not differ by socioeconomic status, education, or acculturation. Juarbe et al.'s qualitative work concluded that there was a general misunderstanding of the role of physical activity as it related to health conditions.

Quantitative research on barriers and facilitators of physical activity supported the findings of qualitative researcher (Amesty, 2003; Evenson, Eyler, Wilcox, Thompson, & Burke, 2003; Eyler, Wilcox et al., 2002; Heesch et al., 2000; King et al., 2000; Masse & Anderson, 2003). Amesty reviewed and synthesized research on the obstacles (i.e.,

barriers) to physical activity in the context of residence, poverty, and immigration. In addition, Amesty argued that the environment, specifically neighborhoods and areas where people resided, must be a higher priority research focus than individual factors that may be barriers to physical activity. Amnesty's conclusions attempted to direct policy and community program development in an effort to address environmental barriers to physical activity for Hispanic women. While this discussion was important, its limitation was its general discussion for the Hispanic population and the lack of addressing barriers and facilitators of physical activity specific to women who potentially had specific requirements.

The empirical research by King et al. (2000) and Heesch et al. (2000) considered barriers and benefits to physical activity in a variety racial and ethnic groups using the same research data focused on different outcomes. The research data for both studies were taken from the U.S. Women's Determinants Study (Brownson et al., 2000). The research surveyed 2,912 women, 660 of whom were Hispanics aged 40 and older . The most frequently reported perceived barriers for Hispanic women were care giving duties and self-consciousness about physical appearance (King et al., 2000).

While the body of research on benefits and barriers began to identify personal and environmental barriers and benefits of physical activity in the qualitative realm, there was limited but increasing quantitative research on identifying barriers and benefits to physical activity for Hispanic women. Further, research was lacking that correlated quantitative results of exercise self-efficacy, stages of exercise/physical activity change, health promotion behaviors, physical activity, and physical markers (e.g., BMI, weight

changes) specifically during postmenopause. There was no specific quantitative research dedicated to postmenopausal Hispanic women with these correlates.

Problems Identified with the Assessment of Physical Activity

Problems with the psychometric development of measures for physical activity were not new in the Hispanic population. However, cultural factors were described as having an influence on the use and applicability of measurement tools (Brownson et al., 1999; Eyler, Matson-Koffman et al., 2002b; Warnecke et al., 1997).

The seminal psychometric instrument development for the measurement of physical activity was done by Sallis, Pinski, Grossman, Patterson, and Nader (1988). Using Bandura's (1977) framework on self-efficacy, the researchers developed a self-efficacy scale for health-related eating and exercise behaviors. The first study had 40 multiracial participants, 10 of whom were Hispanic. The second study included 171 individuals, mostly Caucasian college students. The study age groups were younger than 45 years and were individuals in the process of changing dietary and/or exercise patterns. One limitation was that the scales were developed on the multicultural group but validated on a homogenous group. The test-retest reliability on the Self-Efficacy for Exercise Scale was 0.68 with the Cronbach's alpha of 0.83 and 0.85. Sallis et al. (1988) suggested the scale be used to help identify behaviors perceived as difficult to change or circumstances in which risk relapse might occur.

In a landmark study on evaluating questionnaires for cultural bias from National Health Surveys, Warnecke et al. (1997) found that variations on the definition of physical activity were evident across cultures and races. The study population included 423 African Americans, Puerto Ricans, Mexican Americans, and non-Hispanic whites

between the ages of 18 and 50 years. The study revealed problems and potential solutions that would assist future research on physical activity and improve the validity of questions being asked to assess physical activity. Problems with the research instruments included (a) the participants' propensity to use extreme response categories, (b) overly reporting socially desirable information and underreporting socially undesirable information, (c) variations in definitions of physical activity, and (d) gender and ethnicity influences on the interpretation of the questions. Solutions included using interviewers from the same racial or ethnic group; writing questions to ensure that, where response cues occurred, they led the respondent to answer in an unbiased way; and attending to the order of questions to eliminate redundancy.

Brownson et al. (1999) developed a tool to measure physical activity testing it on a multiethnic sample including 660 Hispanic women. In a study examining sociodemographic and behavioral correlates of physical activity, Brownson et al. found that redefining physical activity to include occupational activity potentially raised the possibility of response bias. Findings indicated a high prevalence of occupational physical activity. While this study had some interesting findings that were potential limitations in the cultural competence of the tool and response bias. A major outcome of the study found that, when all types of physical activity were considered, including occupational activity, ethnic minority women from lower socioeconomic levels were active enough to achieve health benefits.

Another problem in research measuring physical activity was the difference in activity type, frequency, duration, and intensity, as well as the variability both within and among participants and populations (Eason, Masse, Kelder et al., 2002). Researchers

sought to identify energy expenditure among older African American and Hispanic women to determine how many days of the self-reported physical activity diary were needed to reliably estimate total physical activity and forms of physical activity. For the self-report diary, a range of 8-14 days of reporting was suggested. However, the study determined that the number of days needed for reliable estimation was different for each minority group. For Hispanics, between 8-14 days of self-report were needed to estimate total activity reliably, 7-42 days were required to reliably estimate activity by type, at least 14 days of dairy reporting were needed for workers, and 8 days were required for nonworkers. This research justified the need for culturally specific tools in measuring components of physical activity.

One problem of using a 7-day diary was described in a study conducted by Eason, Masse, Tortolero, and Kelder (2002). The study included 111 African American women and 116 Hispanic women. The purpose was to examine the relationship between Type A behavior and total activity. The findings in the study found no evidence of a pattern or uniformity in the associations, and limited variance was elucidated in the models. The use of the 7-day diary might not have been an accurate measure for these populations based on critiqued work by Eason, Masse, Kelder et al..

There were, however, tools used to measure correlates of physical activity that have been successful (Booth, 2000; Evenson et al., 2003; Walker, Kerr, Pender, & Sechrist, 1990). In an effort to eliminate the problems with the current state of physical activity instruments, a global committee of authorities on physical activity developed the International Physical Activity Questionnaire (IPAQ). The purpose of the instrument was to measure self-reported levels of physical activity in different populations in global

research. Found on the internet in a variety of languages, the IPAQ has been made available in both long and short forms (Booth, 2000; International Physical Activity Questionnaire Committee, 2004). The long and short versions have been tested on 2,450 males and females in 14 countries, with a mean age in each country ranging from 25 to 49 years. The tool's validity and reliability were excellent. The IPAQ was also developed for surveillance activities and to guide policy development related to health-enhancing physical activity across various life domains(International Physical Activity Questionnaire Committee).

Research Variables and Related Conceptual Framework

This section reviewed literature relevant to the psychosocial correlates being studied (i.e., exercise self-efficacy, stages of exercise change, health promotion behaviors). Each section analyzed research and examined the relationship between the psychosocial variables and physical activity. There was a dearth of research on exercise self-efficacy, stages of exercise change, health promotion behaviors, and the relationship of health problems associated with BMI and physical activity. While research in this literature review occasionally overlapped the age group of Hispanic women who might be postmenopausal, the studies were not specific to postmenopausal women, a group more likely to experience higher levels of inactivity and obesity.

Correlates of Self-efficacy Related to Physical Activity

In this section, self-efficacy research specific to physical activity and Hispanic women was reviewed. In some research, self-efficacy was considered a facilitator or barrier to physical activity. Self-efficacy is theoretically a mediator of change in individual's physical activity behavior. Several of the research studies that included the

effect of self-efficacy on psychosocial correlates were reviewed. In addition, two of the interventional studies focused on self-efficacy were critiqued. The available research did not specifically consider postmenopausal Hispanic women.

Several studies demonstrated a positive correlation between self-efficacy and physical activity (Eyler et al., 2003; Masse & Anderson, 2003; Sallis et al., 1989; Sternfeld et al., 1999; Trost, Owen, Bauman, Sallis, & Brown, 2002; Wilbur, Chandler, Dancy, & Lee, 2003). The landmark study by Sallis et al. (1989), done in San Diego, California, used social learning theory as a framework in a study of 24 determinants of vigorous exercise including self-efficacy. Participants were a multiethnic sample of 1,789 men and women, 3% of whom were Hispanic women over 50 years of age. The strongest correlates included self-efficacy, perceived barriers to exercise, support from friends, age, dietary habits, and modeling. One weakness of this study with reference to the Hispanic population was that the study primarily reported analysis on the data comparing gender and age groups rather than ethnic and racial groups. Sternfeld, Ainsworth, and Quesenberry's (1999) research on a diverse population of women demonstrated that self-efficacy, social support, and employment were positively associated with a higher likelihood of participation in sports and exercise. In contrast, however, the researchers found that being Hispanic, care giving, and being married were strongly related to the household care giving index that was equated with the perception of having too little time for exercise (Sternfeld et al., 1999). A strength of this study was the inclusion of 211 Hispanic women (M = 42 years) and a well-constructed methodology of domain-specific activity associated with psychosocial and demographic variables. A weakness was the lack of a framework for the psychosocial variables.

In studies done by Wilbur, Chandler, Dancy, and Lee (2003) and Eyler et al. (2003) on correlates of physical activity that included Hispanic women, researchers discovered that levels of physical activity were higher in women who had higher levels of self-efficacy. However, in the study by Wilbur, Chandler, Dancy, and Lee (2003), only 36% of the participants met the current recommendations for moderate or vigorous physical activity and 64% were either insufficiently active or inactive. Those who were somewhat confident about becoming active were six times more likely to report physical activity. A strength of the study was the large number of participants (n = 300); however, the age group was from 20 to 50 years, which potentially precluded studying women of postmenopausal status. In the multiethnic study that included Latina women by Eyler et al. (2003), a questionnaire on physical activity and psychosocial correlates, including self-efficacy, was developed and tested. The research findings for the urban Latina population demonstrating self-efficacy for exercise showed a trend indicating those who were more confident were more likely to be active (Voorhees & Rohm Young, 2003).

Masse and Anderson (2003) studied the five psychosocial correlates with physical activity, including self-efficacy, in a sample of Hispanic and African American women. Interesting, the study revealed that higher levels of self-efficacy correlated with the stage of exercise change of action and maintenance. The sample consisted of 130 Hispanic women. One strength of the study was the use of Social Learning Theory, the Theory of Reasoned Action, and the Health Belief Model. The five constructs from the models measured in the study were considered mediators of change in physical activity behavior.

Two interventional research studies that addressed Hispanic women and physical activity were critiqued. Castro et al. (1999) explored the effect of an intervention to

facilitate physical activity and the psychosocial correlates of self-efficacy, social support, perceived barriers, and enjoyment in a multiethnic sample. Over one-half (58%) of the 128 participants were Hispanic. The Stanford walking kit was used to initiate a walking program with behavioral counseling phone calls to prompt continued walking. The attrition in the intervention group was higher than in the control group, with 17 and 4 participants respectively dropping out of the study. Unfortunately, the outcome data did not demonstrate a difference between the control and intervention groups, although both groups increased walking and maintained gains in physical activity at follow-up, 3 months after the intervention was completed. The gains made by the participants, however, still did not reach the recommended level of physical activity for health and fitness. In addition, the effect of the intervention on self-efficacy and enjoyment were opposed to what was expected, with a decrease in self-efficacy and enjoyment at the 3-month follow-up. The results were surprising as the research design was logical and built on Bandura's (1986) social cognitive theory, but the intervention methods might have contributed to the results.

Similarly, Allison and Keller (2004) studied a self-efficacy intervention to facilitate physical activity. The study measured the effect of a self-efficacy intervention, coaching by nurses, and how it correlated with the self-efficacy expectations for physical activity, self-reported physical activity, and physical activity performance (i.e., distance walked in 6 minutes). While 71% of the study sample were post cardiac surgery individuals, a limitation of the study was the sample population that was primarily Caucasian (80.7%) and only 16% of participants being Hispanic. It was unclear how many Hispanic women participated, but 26 women ranged in age from 60 to 85 years. In

addition to the unknown number of Hispanic women, the study population was primarily cardiac post surgical patients participating in an exercise program for cardiac rehabilitation. While the study intervention did not demonstrate a direct effect on the participants levels of self-efficacy for physical activity post-cardiac event, it did reveal an indirect interaction on increased distance walked and the older adult's levels of self-efficacy for physical activity over the research period of 3 months (Allison & Keller, 2004). The strengths of the study were the theory base and the instruments used; however, the applicability of these findings to a non-cardiac (e.g., surgical) group of postmenopausal Hispanic women was limited.

Correlates of Stages of Change Related to Physical Activity

Using the TM, stages of exercise change theory was developed by Prochaska et al. (1992) and applied to exercise (Marcus & Simkin, 1993, 1994). The five stages identified in the model were precontemplation, contemplation, preparation, action, and maintenance. Precontemplation occurred when there was no intention to change behavior. Contemplation occurred when people were aware that there was a problem, were thinking about overcoming it, but had not made a commitment to action. Preparation combined the intention and some minor behavioral modifications. In the action stage, individuals were more committed to modify their behavior, experiences, or environment to overcome the problem. In maintenance, the focus was on relapse prevention and the continuation of change. Several studies began to address stages of change and the correlates of physical activity of Hispanic women (Bull et al., 2001; Heesch et al., 2000; Suminski & Petosa, 2002). Although Suminski and Petosa used a multiethnic sample of college students in their study, including both men and women, the results indicated that the stage of change

varied with ethnicity, with higher percentages of minorities being in precontemplation and contemplation stages. The ages of the students ranged from 17 to 58 years, but age was not specified by gender. One limitation of this study was its problematic generalizability to postmenopausal women who were potentially in a different age group from college students studied. Hispanic women were found more likely to be in the non-exercise stages (i.e., precontemplation, contemplation, preparation) than in the exercise stages (i.e., action, maintenance) although age was not identified (Suminski & Petosa, 2002).

The results of Suminski and Petosa's study (2002) could be compared and contrasted with the outcome of research done on women from an ethnically diverse populations by Bull et al. (2001). Using TM stages of exercise readiness, Bull et al. found that Hispanic women, aged 40 years and older, were more likely to be in the action and maintenance stage, while older women were more likely to be in the precontemplation stage. Unfortunately, it was difficult to compare Suminski and Petosa's work, because the study participants' ages were not specified by gender. A limitation that both of the studies demonstrated was the potential misclassification of participants. Over one-half of the participants in Bull et al.'s study were in the maintenance stage and in Suminski and Petosa's research (2002), 22% of the Hispanic participants were misclassified. This classification problem was also seen in other research. Heesch et al. (2000) found a higher percentage of women classified as maintainers and collapsed two stages in the analysis due to the small numbers of participants in those stages. The concern with classification errors extended to the definitions of exercise and physical activities. Culturally specific physical activities were not mentioned in the assessment instrument.

While there appeared to be some limitations in the study of stage of exercise change, more inclusive cultural definitions of physical activity and focusing specifically on a particular homogenous age group could ameliorate some of these problems.

Research undertaken by Heesch et al. (2000) correlated the stage of exercise adoption (i.e., change) with benefits and barriers to physical activity in different racial and ethnic groups. For the Hispanic participants, significant barriers in the precontemplation stage were bad health and fear of injury; in the contemplation stage, the barriers were fatigue and lack of time; in the preparation and activity stages, barriers were a lack of energy and being discouraged. One limitation of the study was the mixed results in two stages suggesting a misclassification of participants in the stages, possibly due to participants cultural definitions of physical activity and exercise. Another limitation was the potential effect of one's level of acculturation, a factor not measured.

A literature review regarding the TM and physical activity research was critiqued to determine relevance to Hispanic women. Marshall and Biddle's (2001) meta analysis of physical activity and exercise using the TM of behavior change included 71 international reports of empirical data using one core construct of the model applied to physical activity and exercise. While several articles considered this model and its relevance to Hispanic women, including Bull et al. (2001) and Heesch et al. (2000), the ethnicity of the participants was neither analyzed or mentioned in the meta-analysis. Further, while gender was considered a moderator variable, only three studies that focused on women were listed in a table and the data was not presented in Marshall and Biddle's (2001) findings.

Correlates of Health Promotion Behaviors

Lifestyle physical activity was exemplified by incorporating short periods of moderate activity into daily living (Pender et al., 2002). This section examined empirical research on several facets of health-promoting behaviors and Hispanic women. The facets explored included sedentary activity, leisure time activity, health promotion lifestyle interventional studies, and sociodemographic studies related to health promotion behaviors. First, sedentary and lack of leisure time activity research revealed higher levels of physical inactivity and sedentary lifestyles. The empirical research further identified levels of inactivity in rural verses urban populations. Interventional research demonstrated a limited contribution to the understanding of health promotion behaviors. Research on socioeconomic and sociodemographic characteristics established that there were socioeconomic factors that were barriers and facilitators to health promotion behaviors.

Correlates of sedentary and leisure time activities. Quantitative research established that Hispanic women had limited leisure time physical activity and were more sedentary, especially women in rural settings (Anderson et al., 2001). Within the HPM, sedentary behavior could be considered a situational factor that influenced commitment to a plan of action and health promotion behavior. The Behavioral Risk Factor Surveillance Survey (BRFSS), the world's largest telephone survey, has been conducted annually by the CDC to track health risks in the United States. Research indicated that Hispanics were more likely to report no leisure time activity, with 57% not meeting recommended guidelines for moderate activity and 73% not meeting the recommended guidelines for vigorous physical activity (Bolen et al., 2000; Centers for Disease Control

& Prevention, 2004). A weakness in this survey was the potential cultural misdefinition of physical activity within the BRFSS questions (Warnecke et al., 1997).

Research outcomes from the Third National Health and Nutrition Examination Survey (NHANES III) and the U.S. Women's Health Initiative positively correlated a sedentary lifestyle and no leisure time physical activity with an increased in women who were overweight and obese (Anderson et al., 2001; Manson et al., 2001). One strength in both of these quantitative studies was the inclusion of a large numbers of participants; the NHANES III incorporated 6,596 Hispanic participants and the Women's Health Initiative included 3,375 women participants. The NHANES III survey used four open-ended questions to explore levels of physical activity. The U.S. Women's Health Initiative calculated metabolic equivalents from reported frequency of walking and leisure time activities. These large inclusive studies demonstrated that the Hispanic population had limited leisure-time physical activity and were unable to meet the national recommendations for moderate or vigorous physical activity. The limitations of these correlational studies were the absence of a theoretical framework and the inability to identify the contributing factors that caused or predicted the higher sedentary lifestyle among Hispanic women.

In contrast, using social cognitive theory and ecological theory, Wilcox et al. (2000) explored determinants of leisure time physical activity. The research revealed that rural women were more sedentary than their urban counterparts due to a greater number of barriers to physical activity. Care giving was the greatest barrier to physical activity. The strengths of this study were the theoretical framework and the large Hispanic population ($n = 447$). Research on sedentary lifestyle, rural settings, and levels of

inactivity for Hispanic women described problems that contributed to obesity, comorbidities, and health problems.

Interventional research related to health promotion. Several interventional research studies were conducted in an effort to enhance physical activity in Hispanic populations (Allison & Keller, 2004; Castro et al., 1999; D'Alonzo, 2002; Whitehorse, Manzano, Baezconde-Garbanati, & Hahn, 1999). Unfortunately, two of the studies found the interventions had limited effectiveness and a third study had no outcome data (Allison & Keller, ; Castro et al., ; Whitehorse et al.). Two studies were related to self-efficacy and were discussed in the section on self-efficacy literature. D'Alonzo found that interventions consistently increased physical activity scores, improved fitness, and exercise self-efficacy. However, the study population encompassed college-age women, not older or postmenopausal women.

A multidisciplinary community project funded by California's state and local health services departments sought to create a culturally specific, physical activity program for Hispanic women (Whitehorse et al., 1999). A qualitative needs survey was done with a convenience sample of 305 Hispanic adults to determine health perceptions and problems or barriers to physical activity. Further research was done to determine health problems and isolated the contributing factors of poor nutrition and lower levels of physical activity. An intervention program using salsa aerobics classes was developed. The results section emphasized their recruitment methods for the classes. The level of activity was measured using the questions from the BRFSS. The project was funded for 4 years and was unable to collect outcome data regarding health changes; however, 487 men and women participated with 87% of the participants not meeting the physical

activity guidelines. While the program was well received by the community and united community resources, the lack of lifestyle and health outcome data was disappointing.

In reviewing the literature on physical activity intervention research with aging adults, Conn, Minor, Burks, Rantz, and Pomeroy (2003) identified 17 studies that met the research criteria. Criteria included a mean subject age of 65 years and older, a minimum of five participants, research conducted from 1960 through 2000, and a direct measure of physical activity or exercise outcome variables. Only six of the 17 studies mentioned minority enrollment, although the authors did not delineate the makeup of that enrollment. Unfortunately, that missing information would have been useful in a literature search to inform the research community of the analysis available on interventions of physical activity in relationships to ethnicity and race.

Correlates of socioeconomic and demographics. Numerous studies included relationships found within the demographics; however, several studies focused on socioeconomic and demographic variables (Elder et al., 1998; Sternfeld et al., 1999). Elder et al. researched the cardiovascular risk factors in Hispanic men and women, including physical activity levels, and correlated them with socioeconomic status. The study participants had an average age of 28 years and were part of a larger, longitudinal study assessing a nutrition education program for Hispanic, English-as-second-language (ESL) students. Of interest to this review were the behavioral findings regarding physical activity. The research outcome found higher income was correlated with greater physical activity and more women were frequent exercisers and were generally healthier than men were. The limitation of this study was the age group, which did not include postmenopausal women who had a higher risk of cardiovascular problems as well as

increased levels of inactivity (Dubnov et al., 2003). This limitation made the results problematic for generalization to the postmenopausal age group of women.

Sternfeld et al.'s (1999) research was specific to physical activity, psychosocial determinants, and demographic covariates, including education, number of children, marital status, employment, and race. Among other outcomes, employment was positively associated with a higher likelihood of participation in sports and exercise. Women who participated in higher levels of sports, exercise, and active-living behaviors were more likely to be without young children at home, leaner, white, and college educated. Hispanic women were most likely not in this category but instead were in the category with the highest level of household and care giving activity, with younger children at home, and not employed. The research noted that, while psychosocial factors were modifiable, demographic factors might not be modifiable. However, the outcomes of this study were cross sectional and did suggest that further consideration of socioeconomic status was warranted (Sternfeld et al., 1999).

An extensive literature review performed on correlates of physical activity in women from diverse racial/ethnic groups, including Hispanics, was done by Eyler, Wilcox et al. (2002). The review utilized an ecological model to organize the results of 91 studies conducted in the last 20 years. The literature review categorized data and considered demographics, biological or health factors influencing physical activity, psychological factors influencing physical activity, and environmental factors. The literature review concluded that, although attention to physical activity research was increasing for minority women, few studies included Hispanic women. Secondly, sociodemographic correlates to physical activity were commonly found in research.

Finally, the authors noted that, although all ethnic groups shared correlates of physical activity, attention was needed to address the uniqueness in each group when planning effective programs. The depth and breath of this study was only eclipsed by not including literature on correlates (e.g., stages of exercise change in relationship to physical activity).

Correlates of Health Problems and BMI Related to Physical Activity

The final category of correlates related to physical activity in Hispanic women encompassed several studies that considered biological markers, including insulin levels, obesity, BMI, and poor health, in correlation with physical activity (Barrett-Connor et al., 1996; Manson et al., 2001; Masse & Anderson, 2003; Shetterly et al., 1996). Hispanic postmenopausal women were found to have higher adjusted mean fasting levels and 2-hour insulin levels than non-Hispanic whites (Barrett-Connor et al.). Further, a modest association was found between physical activity and lower fasting glucose levels. The study underscored the importance of further research on the role of ethnicity in the area of obesity, BMI, physical activity, and insulin levels. Obesity and higher BMI in Hispanic women have been correlated with sedentary activities, and being Hispanic has been a predictor of obesity (Manson et al., 2001; Masse & Anderson, 2003). In addition, research by Shetterly et al. (1996) found that Hispanics were 3.4 times more likely than non-Hispanic whites to report fair or poor health. Physically active Hispanic participants were less likely to report poor health when compared to individuals that are more inactive. The research on health markers highlighted the need for research on modifiable factors related to physical activity to help to ameliorate the problems associated with being overweight and obese, particularly in postmenopausal women.

Conclusions

A comprehensive analysis of the empirical literature on psychosocial correlates, health promotion behaviors, and physical activity in Hispanic women was presented. The literature review examined the contextual variables of barriers and benefits of physical activity and problems were identified in the literature regarding physical activity. The research literature was critiqued on the variables pertinent to this study, including exercise self-efficacy, stages of exercise change, health promotion behaviors, and health problems related to physical activity in Hispanic women. In summary, limitations and gaps in the research regarding the study variables were described.

Frequently, the research on psychosocial correlates and physical activity in Hispanic women was done in combination with other minority groups (Evenson et al., 2002; Eyler et al., 1998; Eyler et al., 1999). There are several limitations in this approach. The first limitation was the resultant small numbers of Hispanic women included within a mix of minority participants (Eyler et al., 1998; Melillo et al., 2001). A second limitation of multiethnic studies was the selected, arbitrary age range in the sample groups that may omit a particular group of participants affected by higher levels of inactivity and weight gain, including those who are postmenopausal (Eyler, Matson-Koffman et al., 2002a, 2002b). For example, in addressing barriers and facilitators to physical activity, age range might not be as effective a measurement in directing the research in the area of physical and psychosocial change as would be the time after menopause when increased weight and inactivity occur.

Although self-efficacy and stages of physical activity change have been studied in limited research, they have not been studied in postmenopausal women (Eyler et al.,

1999; Heesch et al., 2000; Masse & Anderson, 2003; Sallis et al., 1989; Sternfeld et al., 1999). One study explored stages of exercise change in women, aged 40 to 70 years, and concluded those with higher self-efficacy were more likely to engage in physical activity (Masse & Anderson, 2003). Research by Wilbur et al. (2003) found a direct correlation of higher levels self-efficacy with higher levels of physical activity in Hispanic women, 20 to 50 years of age. While quantitative research was available on physical activity and self-efficacy, the lack of older Hispanic women, modifiable psychosocial correlates, and health promotion behaviors were limitations that created a gap in the literature that could contribute knowledge and ameliorate the problems of physical inactivity in postmenopausal Hispanic women.

When considering the research on stages of exercise adoption (i.e., change), there were some limitations in the study samples and the application of the theoretical model in the studies conducted. All the research on Hispanic individuals was within larger, multiethnic studies. While Heesch et al. (2000) carefully identified stages of exercise adoption (i.e., change) and perceived barriers to exercise in multiethnic groups, the lack of sub-groupings in the large Hispanic sample served as a limitation. This research could be replicated with Hispanic subgroups to glean specific information that would be helpful in planning more culturally-specific interventions related to physical activity. Suminski and Petosa's (2002) research also focused on a multiethnic approach to stages of exercise change with the further limitation of a generally younger-aged population of college students.

While surveying a large number of minority women, including Hispanic participants, Bull et al. (2001) found that 49% of the minorities were in the maintenance

stage of exercise change. The possible problem with this skewed distribution might reflect a problem with the modified psychometric tool that was utilized in the research. The gap in the research was the lack of focus on Hispanic women and, specifically, older, postmenopausal Hispanic women. Research focusing on postmenopausal Hispanic women and differences in stages of exercise change might help yield a further understanding of women's perceptions as to their level of physical activity. The understanding of women's perception of stage of exercise was the beginning to strategic planning of an approach that was appropriate to women's interest and desire to participate in physical activity.

Research on health promotion behaviors of Hispanic women that has been presented was multifaceted, examining leisure time activity, sedentary activity, socioeconomic effects, demographic effects, and interventional research. In reviewing the interventional research on physical activity with Hispanic women, a more focused approach to this population has been undertaken in two studies (D'Alonzo, 2002; Whitehorse et al., 1999). In one study, although there was an impressive multidisciplinary intervention approach undertaken by Whitehorse et al. (1999), the research was problematic because it only gleaned evaluation of methods of outreach and media promotion rather than results measuring levels of physical activity and health outcome value. The other study, on interventions with physical activity and Hispanic women by D'Alonzo (2002), focused on college age women; therefore, the results could not be generalized to postmenopausal-age women. Several interventions have been tested with mixed results. Castro et al. (1999) and Allison and Keller (2004) included small numbers of Hispanic women within their multiethnic and/or gender research. Not only did the

study results not completely meet the study objectives, but the results from both sample populations could not be generalized to postmenopausal Hispanic women. Research applications of psychosocial correlates and interventional studies were an area of needed research for postmenopausal Hispanic women to help determine what interventions would be successful in facilitating increased levels of physical activity for this population.

The noted limitations of studies undertaken and gaps of research found in this literature review served to help further identify future directions in research for postmenopausal women. This population has the most to gain from further research due to the increased numbers of individuals in this age range as well as this population's risk for higher levels of inactivity and ensuing weight gain, obesity, and comorbidities.

Chapter 3

Method

This chapter outlines the research design, methods, and procedures applied in this study. The sample, settings, power computations, data, statistical analysis, limitations and ethical considerations are described.

Design

A descriptive correlational design was used to address the research questions. The research questions are as follows:

1. Is there a significant relationship among psychosocial variables of exercise self-efficacy, stages of exercise behavior, health promotion behaviors, and the level of physical activity in postmenopausal Hispanic women?
2. Is there a significant inverse relationship among the psychosocial variables of exercise self-efficacy, stages of exercise behavior, health promotion behaviors, the level of physical activity, and health problems and BMI in postmenopausal Hispanic women?

This design provided several scientific benefits, such as helping to understand the relationship of the variables, the connections between the variables, identifying variables that had a significant correlation, and those variables that do not have a correlation. Using multivariate analysis, the research explored the relative contribution of the correlates exercise self-efficacy, stages of exercise behavior, health promotion behaviors, and the level of physical activity in postmenopausal Hispanic women. Demographic variables included age, education level, weight, height, country of origin, socioeconomic status, marital status, and health problems. A correlational matrix was presented. The dependent

variable was the level of physical activity in postmenopausal Hispanic women. The independent, modifiable, psychosocial correlates were exercise self-efficacy, stages of exercise behavior, health promotion behaviors, and demographic variables.

Sample and Sampling

A nonprobability convenience and network sampling method was used to gather participants. Participants were gathered by the researcher and contacted family members.

Eligibility Criteria

Inclusion criteria included postmenopausal women, defined as 6 months past their last menstruation, and who were able to speak and/or read English. Women who self-identify as Hispanic were included. In this research, volunteer Hispanic women meeting the criteria were included in the study.

Recruitment

Participants were recruited from two San Diego medical clinics that serve Hispanic patients, several local Hispanic churches, local senior and community centers, word of mouth, volunteer organizations, and social organizations. These settings were selected because groups of postmenopausal Hispanic women would likely be accessible. The variety of settings presented women from different local areas that were not housebound.

Flyers were posted on bulletin boards of churches and clinics that served Hispanic individuals. Advertising was done by word of mouth, church, and clinic newsletters. Potential participants were contacted, screened, and a meeting time was arranged. The researcher met potential participants at the clinic, community center, church, and other safe settings to complete the questionnaires (see Appendix G)..

Pilot Study

A pilot study was with 10 participants to determine the completion time and the clarity of the directions and questions for Hispanic women meeting the inclusion criteria. Participant's feedback was positive and they did not find anything unclear or difficult about the surveys.

Compensation for Participants

Participants were invited to take part in a raffle for a $50.00 gift certificate to Vons grocery store. Tickets with matching numbers were given for each completed questionnaire. All participants received written pamphlets with information on menopause, diet, and the benefits of physical activity.

Informed consent

The research project was explained and those who wished to participate signed two consent forms. One copy was given to the participant and the other was kept in a locked file in the investigator's home office. After the consent was signed, each participant completed the questionnaires (see Appendix H).

Procedures to Protect Confidentiality

Confidentiality of both the written questionnaires and participant identification was of utmost concern. The collected data were for the sole purpose of this research project. Participants received verbal and written information about the study project's purpose, potential risk, and benefits of the study. Surveys were separated from consent forms, coded, and access was limited to only those directly active in the research process, including the investigator, a research assistant, and the statistician. Data were analyzed using SPSS (2004) and codes without names were used in the database. Consent forms

were written in accordance with HIPAA regulations, the University of San Diego's Internal Review Board, and other participating ethics committee regulations (See Appendix I). No participant names appeared on any of the data collection tools. All data will be kept in a locked file for a minimum of 5 years before being destroyed.

Potential Benefits of Proposed Research and the Safety Ratio.

The findings from this research will enable the field of nursing to develop interventions and programs to facilitate health promotion behaviors with the inclusion of physical activities that are culturally-specific and appropriate for postmenopausal Hispanic women. There was a risk for fatigue. Participants were encouraged to take their time and not feel rushed. Participants received a pamphlet describing health information related to weight changes after menopause and physical activity. If a participant became fatigued while completing the questionnaires, arrangements were available to make another appointment time to complete the questionnaires; however, this did not occur. The ratio of risks to potential benefits was low considering the low level of risk involved in survey completion, the potential benefits of the research, and the emphasis on maintaining confidentiality.

Power Computations

Power computations were calculated with a biostatistician using GPOWER (Franz & Erdfelder, 1992). The computations were based on a 0.05 level of significance with a moderate effect size (.5σ) and an estimated power of .80 (80%) to yield a total sample size of 102. According to Katz (1999), the ratio of participants to variables is 20 participants per independent variables. There were five variables in this study: exercise self-efficacy, stages of exercise behavior, health promotion behaviors, demographic data,

and the level of physical activity; therefore indicating a sample size of 100 participants. One hundred twenty-one participants were used for this study.

Data Analysis and Procedures

Statistical Analysis

Data was analyzed using SPSS Version 13.0 (SPSS Inc., 2004). Multivariate procedures (e.g., multiple regression analysis, correlation, and potential ANOVA) were conducted to explore relationships among exercise self-efficacy, stages of exercise behavior, health promotion lifestyle behaviors, demographics, and the level of physical activity in postmenopausal Hispanic women.

Data analysis plan. Descriptive statistics and a correlational matrix were used to analyze the data, to address the specific research questions, and to answer the research questions.

Procedures and Instruments

For the purpose of this study, each of the concepts, exercise self-efficacy, stages of exercise behavior, health promotion behaviors, and the level of physical activity were operationally defined. Demographic variables of Hispanic subgroups, health problems, and BMI were also operationalized. The five self-administered instruments used in this study were (a) the demographic profile, (b) Exercise Self-efficacy Questionnaire, (c) Stages of Exercise Behavior Questionnaire, (d) HPLPII II, and (e) IPAQ (short version). Permission for use of these instruments, which were not in the public domain, was obtained as necessary (see Appendix F). Table 2 shows a descriptive summary of the instruments used in measuring study variables, including variable measured, instruments used, sources, number of items, validity and reliability measures, and the estimated length

needed to complete each tool. The tools used in this research were in English and had reliability and validity data in English. Although some of the tools had been tested in Spanish, not all tools had been translated and tested; therefore, only English instruments were used.

Table 2

Summary of Characteristics of Instruments Used to Measure the Independent and Dependent Study Variables

DESCRIPTORS	INSTRUMENTS				
Title	***Exercise Self-efficacy Questionnaire***	***Stages of Exercise Change***	*HPLPII II*	***International Physical activity Questionnaire (Short version)***	***Demographic Questionnaire***
Variable	Exercise Self-efficacy	Stages of Exercise Change	Health Promotion Behaviors	Level of Physical Activity	Demographic Data including Health problems & BMI
Reference	(Marcus, Rossi et al., 1992)	(Marcus & Simkin, 1993)	(Sechrist, Walker, & Pender, 1987; Walker et al., 1987; Walker et al., 1990)	(Booth, 2000; International Physical Activity Questionnaire Committee, 2004)	(National Institutes of Health, 2004)
Validity	Items shown to be important by exercise researchers. Sallis (1988) Factor analysis of principal components and found 2 factor: resisting relapse and making time for exercise important	Content validity with doctoral level judges Concurrent validity demonstrated by its significant association with the Seven Day Recall Physical Activity Questionnaire	Principal Factor analysis supported the presence of the six factors used as subscales	Criterion validity determined by having participants wear a Computer Science Applications accelerometer for 7 days. The median rho of 0.30 against the CSA accelerometer for minutes of moderate, vigorous, walking and sedentary behaviors. The validity reference points were similar	*
Reliability	Study 1: Internal Consistency .82 (n = 917) Study 2: .76 measure of internal consistency (n = 366) Test-retest (product moment)reliability over two weeks .90 (n = 20) 2 week Kappa Index .78 (n = 20)	Kappa index of reliability over a two week period .78	Cronbach's alphas for total HPLPII II .943	Test-retest reliability of all versions had a clustering of the Spearman's Rho around 0.8	*
Number of Items	5	5	52	7	20
Completion Time	3 minutes	10 minutes	30 minutes	10 minutes	10 minutes

Instrumentation

Data sources included the instruments listed, which were standardized instruments that were theoretically appropriate with the constructs underlying the research, demonstrated quality psychometric properties, and were easy to use (see Table 2).

Exercise self-efficacy (ESE). The ESE, a five-item survey, was developed from Bandura's (1977)theory that exercise self-efficacy was a strong motivating psychosocial factor in the ability of individuals to exercise and be physically active. Self-efficacy was identified with the performance of behaviors, including exercise and smoking, by Prochaska et al (1992). The questionnaire, built on Sallis' (1988) research, was designed to measure a person's confidence in their ability to continue with exercising in various situations"(Marcus, Selby et al., 1992). The questionnaire was tested in three studies by Marcus, Selby et al., sought feedback from participants, and developed improvement in response clarity. The first study included 3,494 government employees, 23% of whom were women. The second study included 1,251 medical employees, 85% women. The third study included 20 employees from the same medical center. Sallis (1988) included Hispanic participants in his research.

The internal consistency measure for the ESE was .76 (Marcus, Selby et al., 1992). Results correlating the self-efficacy items' reliably differentiated the participants at different stages of the exercise change questionnaire. Test-retest reliability over two weeks was .90 (n = 20).

Stages of exercise change (SEC). The five-item SEC questionnaire was developed by Marcus and Simkin (1993). Initial testing of this tool was done with a sample of 1,063 men and women employees at two work sites (Marcus, Selby et al., 1992). The

instrument was refined and retested. The Kappa index of reliability over a two week period was .78. Marcus and Simkin (1993) designed and modified five questions to assess the current stage of exercise behavior (see Appendix C). Several studies used the SEC and correlates of physical activity for Hispanic women (Bull et al., 2001; Heesch et al., 2000; Suminski & Petosa, 2002).

Health Promoting Lifestyle Profile II (HPLPII). The HPLPII questionnaire was a 52-item Likert scale with a 4-point forced scale ranging from *strongly agree to strongly disagree.*

The development and psychometric evaluation, including reliability and validity, has been reported on both English and Spanish questionnaires (Carlson, 2000b; Walker et al., 1990). A manuscript of the revised document is being prepared. The Cronbach's alphas were reported as follows: health responsibility (.861), physical activity (.850), nutrition (.800), spiritual growth (.864), interpersonal relations (.872), and stress management (.793), with a total HPLPII (.943). A principal axis factor analysis supported the six factors that were used as subscales (S. N. Walker, personal communication, February 18, 2005).

Several studies have evaluated the psychometrics of the Spanish version of the HPLPII (Carlson, 2000b; Walker et al., 1990). Carlson found the English- and Spanish-language versions of the HPLPII demonstrated statistically acceptable levels of reliability and equivalency for initial testing. The research hypothesis stating the equivalency of the English- and Spanish-language versions of the HPLPII was supported by the data. Differences in subscale and total mean scores, along with standard deviations, fell within the interval difference of less that 0.5 between subscales and the total scale, as well as a

standard deviation of less than 0.70, which defined equivalency for Carlson's research. The Cronbach alpha for the Spanish version was 0.80, comparable to the English version (0.83). The research coefficient alpha was .94 in study (Walker et al., 1990). The predictive validity was established in other research studies on older women (Conn, 1998).

Level of Physical Activity. Studies on validity and reliability were conducted in 12 countries in 14 research centers on six continents involving approximately 2,450 individuals(International Physical Activity Questionnaire Committee, 2004). The test-retest reliability was conducted over a 3- to 7-day period. Criterion validity was established using a Computer Science Application (CSA) accelerometer for seven consecutive days. Repeat administrations of all versions had a clustering of the Spearman's Rho at approximately 0.8. Criterion validity had a median rho of 0.30 when compared to the CSA. The instrument was recommended as a viable method of assessing physical activity levels globally for populations 18 to 69 years of age.

Numerous forms, including telephone and self-administered forms, and translations of the instrument were created including several Spanish translations. The one selected for this research was the IPAQ: Short Last 7 Days Self-Administered Format in both Spanish and English. The IPAQ Short Format has seven questions to determine the kinds of physical activities people did as part of their everyday lives. The seven items ask about various levels of activity, number of days these activities were performed, and moved the participant through appropriate questions.

BMI. The BMI was calculated from self-reported height and weight. Research supported the use of BMI in risk assessment because it provided a more accurate measure

of total body fat compared with the assessment of body weight alone (National Institutes of Health, 2004). Self-reported and measured weights were highly correlated in a study with 1,384 women aged 60 to 79 years (Lawlor et al., 2002). For ease and accuracy in a variety of research sites, self-reported data has been used for height and weight to determine one's BMI.

Health problems. Health problems were identified on the demographic survey. These outcomes included the number and type of health problems, including hypertension, diabetes, heart problems (e.g., high cholesterol, high triglycerides, heart attack), gallbladder disease, joint and mobility problems, and cancer(s).

Demographics. The demographic questionnaire provided data, including age, education, ethnicity, and history of health problems. Several open-ended questions were included (e.g., *Do you feel your weight is affecting or limiting your life activities? Do you feel your weight is affecting your health?*).

Limitations and Strength of Proposed Research

Self-reported data on height and weight was a strength of the study because it was economical and easily scored. However, a limitation could have been the participants were bias and had potential problems with distortion. However, research comparing self-reported weight of older women and measured weights showed a high correlation with difference of measured weight being only 1 kilogram on average (Lawlor et al., 2002). Another strength of the study was its location in the San Diego area where there was a large Hispanic population. This enhanced the feasibility of obtaining the sample.

Chapter 4

Presentation and Discussion of the Findings

The discussion of the findings is presented in three sections. In the first section, a description of the sample and the demographic data will be presented. The second section depicts a descriptive analysis of the study variables. The third section of the data analysis will discuss statistical analysis as related to the research questions.

Description of the Sample

Frequencies were done to analyze the description of the sample population. The sample size of women (n = 121) were recruited from clinics, churches, word of mouth, North County Latina Women's Association, the Hispanic Nurses Association, companies and schools. Of the 121 returned questionnaires, 10 were unusable, as they did not meet the criteria for participation. For example, one questionnaire listed ethnicity was Asian, and several were not postmenopausal and therefore excluded.

Table 3 identifies the demographic profile of the study participants. Participants' mean age was 57 years (SD 6.2). The majority of the sample was married (62.2%) while 18% were divorced. The preponderance of the participants reported high school grade level (38.7%). While some had from zero to eighth grade education (21.6%), a large number had some college and above (38.7%). The average annual income was between $19,000 and $40,000 (45.4%) while 7.4% were under $10,000 and 21.3% were over $75,000. The participant income was below the median income ($61, 024) for the cities in which the participants lived. The majority of the participants were working (n = 74). The high level of education, high number of employed women and higher income bracket may be representative of a higher socioeconomic group of women.

Table 3

Participant Demographic Profile (n = 111)

Demographics	%
Marital Status	
Married	62.2
Divorced	18.0
Single	5.4
Widowed	10.8
Separated	2.7
Highest Grade Achieved	
Grades 0-8	21.6
Grades 9-11	19.8
High School Graduate	18.9
Some College	14.4
College Graduate	24.3
Annual Income	
Below $10,000	7.4
$10,000-18,000	11.1
$19,000-30,000	25
$30,000-40,000	20
$41,000-75,000	14.8
over $75,000	21.3
Employment	
Full time	63.5
Part time	36.5

Table 4 displays the mean of participants' weight, age of menopause, dress size in high school and current dress size. A Pearson *r* correlation demonstrated that there was no correlation between dress size in high school and current dress size. All participants fit the criteria that they were postmenopausal with six months since their last period.

Table 4

Descriptive Profile of Mean Weight, Age, and Dress Size

Demographics	*M*
Weight	158
Age at menopause	47.6
Dress size	
High School	8.55
Currently	12.70

Table 5 presents the descriptive data on the participants in relation to ethnicity, and family structure. The major country of origin for the participants was Mexico (47.3%) and the United States (35.5%). The self-reported ethnicity was primarily Hispanic American (76.4%). Participants who self identified as *other Hispanic* listed their ethnicity as Latina, Cuban, Hispanic, Latin American, Latina, Mexican, Mexican American, Spanish, and Chicana. Some participants (6.3%) had no children. The remaining participants had from one to nine children. Most participants had adult children 19 and over (91.8%). The majority of the participants were caretakers neither for their grandchildren (61.5%) nor for elderly family members (78.1%). This demographic

was similar to the research done by (Sternfeld et al., 1999). The majority of the participants were in a two-person household with a relative within 10 miles.

Table 5

Descriptive Data Related to Ethnicity and Family Structure

Demographics	(%)
Country of Birth	
North America	
US	35.5
Mexico	47.3
Cuba	3.6
Puerto Rico	3.6
South America	6.4
Central America	2.7
Ethnic Background	
Hispanic American	76.4
Other Hispanic	23.6
Family Structure	
Not caring for grandchildren	61.5
Caring for 1 -8 grandchildren	38.5
Not caring for elderly parents at home	78.1
Number of People in Household	
1-2	49.6
3-4	33.9
5-9	26.4
Nearest relative within 10 miles	73.3
Children	
19 and over	91.8
12-18	12.7

Table 6 presents participants' health information and BMI. One quarter (21.8%) of the participants, identified that their current weight limited their activities, while over a

third (37.8%), identified that their weight was affecting their health. Fifty-six percent reported that they had one or more health problems. Clearly, participants perceived that their weight influenced their health and limited their activity. BMI groupings results demonstrated 71.1 % of the participants were above normal BMI.

Table 6

Descriptive Data Related to Health and BMI

Limitations in activity due to current weight		Percent
No		78.2
Yes		21.8
Weight affecting health		
No		62.2
Yes		37.8
Current health problems		
No		44.1
Yes		55.8
BMI		
Underweight	(Below 18.5)	1.8
Normal	(18.5-24.9)	24.3
Overweight	(25.0-29.9)	34.2
Obese	(30.0 & above)	36.9

Participants reported a variety of health problems. The most significant problems reported were high cholesterol, joint problems, high blood pressure, and diabetic problems. A complete breakdown of health problems is in Table 7. Participants identified a range from no health problems (34.2%) to six health problems.

Table 7

Descriptive Profile of Health Problems

Health Problems	*n*	Percent
High Cholesterol	43	38.7
Joint Problems	38	34.2
High Blood Pressure	34	30.6
Diabetic Problems	33	29.7
Movement Problems	18	16.2
Triglycerides	14	12.6
Cardiac Problems	12	10.8
Gallbladder	4	9.9
Cancers	3.6	4.5

Descriptive Analysis of the Study Variables

Descriptive statistics related to the specific study variables are presented in Table 8 for the research variables of exercise self-efficacy, stages of exercise change, health promotion behaviors, and physical activity.

Table 8

Descriptive Statistics for Research Variables

Variables	*n*	*M*	*SD*
IPAQ	111	2.05	.88
HPLPII	79	2.62	.56
ESE	107	49.4	10
SEC	109	3.42	1.48
BMI	108	28.50	6.19

Note. IPAQ = International Physical Activity Questionnaire; HPLPII = Health Promotion Lifestyle Profile II score; ESE = Exercise Self Efficacy score; SEC = Stages of Exercise Change score; BMI = Body Mass Index.

Table 9 displays each of the stages of exercise change including precontemplation (9.2%), contemplation (28.4%), preparation (14.7%), action (6.4%) and the largest percent in maintenance (41.3%). The participants in this study had the highest reported stages as maintenance which is reflected in Bull's (2001) research. Although a large percent were in the maintenance stage, data analysis scores of the SEC demonstrated that 51.3% of the participants were inactive.

Table 9

Percent of Participants in Each Stage of Exercise Change

Stages of Exercise Change	*n*	Percent
Precontemplation	10	9.2
Contemplation	31	28.4
Preparation	16	14.7
Action	7	6.4
Maintenance	45	41.3

Table 10 shows results of the International Physical Activity Questionnaire or physical activity level: inactive 36.9%, minimally active 58.6%, and health enhancing physically active or a high active category (HEPA) 41.4%.

Table 10

Participants Level of Physical Activity

Physical Activity Level	%
Inactive	36.9
Minimally Active	21.6
HEPA active	41.4

Note. HEPA = health enhancing physical activity; a high active category.

Relationship Analysis of the Data Related to the Research Questions

The purpose of this research is to understand the relationships among psychosocial correlates of exercise self-efficacy, stages of exercise behavior, health promotion behaviors, health problems, BMI and level of physical activity in postmenopausal Hispanic women. This section will present the data analysis results for each research question.

Research question 1. Is there a significant relationship among the variables of exercise self-efficacy, stages of exercise change, health promotion behaviors, and the level of physical activity in postmenopausal Hispanic women?

The independent variables (exercise self-efficacy, stages of exercise change, and health promotion behaviors) were correlated with the dependent variable (level of physical activity) using SPSS 13.0 (SPSS Inc., 2004). The Pearson *r* correlations were all significant ($p < .001$). Table 11 displays the correlation scores for the independent variables that were statistically significant related to the dependent variable.

Table 11

Correlation Coefficients for Variables Related to IPAQ

Variable	ESE Transformed	SEC	HPLPII (*M*)
SEC	.19*		
HPLPII (*M*)	.60***	.56***	
IPAQ Activity Level	.43***	.48***	.57***

Note. SEC = Stages of Exercise Change score; HPLPII = Health Promotion Lifestyle Profile II score; IPAQ = International Physical Activity Questionnaire; ESE = Exercise Self Efficacy score.

*$p < .05$, **$p < .01$, ***$p < .001$.

Because all correlation coefficients were significant, a regression analysis was done on the variables. The analysis accounted for 38% of the variance between all the predictor variables in Table 11 above and the level of physical activity (adj. $r^2 = .375$). The regression reveals that exercise self-efficacy, stages of exercise change, and health promotion behaviors are predictors of the level of physical activity. Table 12 displays the regression analysis, ANOVA, and coefficients of the study variables. Results reveal support of the first research question, that the independent variables of exercise self-efficacy, stages of exercise change, and health promotion behaviors are positively correlated with the level of physical activity in Hispanic postmenopausal women ($F [3, 72] = 15.989$, $p < .001$). Questionnaires were included in the analysis only if they were completely filled out; partial questionnaires were omitted in the analysis.

Table 12

Regression Analysis for Level of Physical Activity

						95% CI for B	
Variable	B	SE	ß	*t*	*p*	Lower Bound	Upper Bound
Constant	-.528	.405		-1.304	.196	-1.335	.279
ESE	.028	.009	.356	3.092	.003	.010	.046
SEC	.086	.348	.145	1.327	.189	-.043	.215
HPLPII *M*	.388	.344	.260	1.983	.051	-.002	.279

Note. ESE = Exercise Self Efficacy score; SEC = Stages of Exercise Change score; HPLPII = Health Promotion Lifestyle Profile II score

Further regression analysis was done with the health promotion subscales, instead of the health promotion behavior overall score, and physical activity. The health promotion subscales are Physical Activity Score (PAS), Spiritual Growth Score (SGS), Stress Management Score (SMS), Health Responsibility (HR), Nutrition Score (NS), and Interpersonal Relations Score (IRS). A close inspection of the results in Table 13 reveals the strongest regression equation ($F [4, 87] = 16.921, p < .001$).

Table 13

Regression Analysis Using HPLPII Subscales

						95% CI for B	
Variable	B	SE	ß	*t*	*p*	Lower Bound	Upper Bound
Constant	-.369	.394		-.936	.352	-1.152	.414
ESE	.019	.009	.232	2.224	.029	.002	.037
PAS	.430	.133	.343	3.237	.002	.166	.693
SGS	.349	.137	.309	2.553	.012	.077	6.21
SMS	-.186	.168	-.127	-1.111	.270	-.520	.147

Note. ESE = Exercise Self Efficacy score; PAS = Physical Activity score; SGS = Spiritual Growth score; SMS = Stress Management score.

Research question 2. Is there a significant inverse relationship among the psychosocial variables of exercise self-efficacy, stages of exercise change, health promotion behaviors, the level of physical activity and BMI and health problems in postmenopausal Hispanic women?

Table 14 demonstrates the inverse significant relationships among the study variables related to health problems. Pearson *r* correlations demonstrated a significant inverse relationship among health problems and stages of exercise change, level of physical activity, and *BMI.* The correlation demonstrated an inverse relationship between the number of health problems and the scores on the independent variables. The relationship between ESE and health problems was not significant.

Table 14

Correlation of Variables Related to Health Problems

Variables	*r*
IPAQ	-.28**
HPLPII Subscales	
Physical Activity Score	-.26**
Nutrition Score	-.21*
ESE	-.20*
BMI	.35**
SEC	-.16

Note. IPAQ = International Physical Activity Questionnaire; HPLPII = Health Promotion Lifestyle Profile II; ESE = Exercise Self Efficacy; BMI = body mass index; SEC = Stages of Exercise Change

*$p < .05$, **$p < .01$, ***$p < .001$.

The correlation scores of each study variable related to BMI are displayed in Table 15. BMI had a significantly inverse relationship with IPAQ, and exercise stages of change. Although there was not a significant relationship between BMI and health promotion behaviors, three subscales demonstrated an inverse significant relationship (i.e., health responsibility, physical activity, nutrition). ESE scores correlated with BMI scores.

Table 15

Correlation of Variables Related to BMI

Variables	*r*
IPAQ	-.28**
HPLPII	-.20*
HPLPII Subscales	
Health Responsibility	-.20*
Physical Activity	-.20*
Nutrition	-.26**
SEC	-.32***
ESE	.01

Note. IPAQ = International Physical Activity Questionnaire; HPLPII = Health Promotion Lifestyle Profile II; ESE = Exercise Self Efficacy; SEC = Stages of Exercise Change

*$p < .05$, **$p < .01$, ***$p < .001$.

Chapter 5

Summary, Conclusions, Implications, and Recommendations

The purpose of this study was to provide a quantitative perspective of the correlation of exercise self-efficacy, stages of exercise change, health promotion behaviors, health problems and BMI with physical activity in the under researched population of postmenopausal Hispanic women. Chapter 5 is organized into five sections. The first section is a summary of the research design and method. The second section describes the cultural findings and limitations. Next is an evaluation discussion with subsequent conclusions. The forth section considers the nursing implications of this research. In conclusion, future research directions are projected.

Summary of the Study

The two aims of this study were as follows: (a) to examine the relationship among the psychosocial correlates of exercise self-efficacy, stages of exercise change, health promotion behaviors, with the level of physical activity in postmenopausal Hispanic women; and (b) to explore the relationship among exercise self-efficacy, stages of exercise change, health promotion behaviors, health problems and BMI with the level of physical activity in postmenopausal Hispanic women. A combined approach of the Transtheoretical Model and Pender's Health Promotion model contributed to the theoretical framework and served as the basis of this research on physical activity. This research operationally defined physical activity to include exercise as a form of physical activity, including walking, cleaning, and gardening. However, physical activity is not limited to self-defined, planned exercise regimens.

The significance of the study is to contribute knowledge that helps to ameliorate the problems stemming from physical inactivity that directly relates to women being overweight and obese. This knowledge will be useful for professionals as a basis to generate future physical activity interventions pertinent to postmenopausal Hispanic women.

The specific research questions used in this study were:

Is there a significant relationship among the variables of exercise self-efficacy, stages of exercise change, health promotion behaviors, and the level of physical activity in postmenopausal Hispanic women?

Is there a significant inverse relationship among the psychosocial variables of exercise self-efficacy, stages of exercise change, health promotion behaviors, and the level of physical activity and health problems and BMI in postmenopausal Hispanic women?

A descriptive correlational research design was used to examine the relationships among the variables. The sample consisted of 121 postmenopausal Hispanic women gathered by nonrandom sampling. The participants were recruited from clinics and churches, by word of mouth, through the North County Latina Women's Association, the Hispanic Nurses Association, companies, and schools in San Diego County. The sample inclusion criteria included (a) postmenopausal women, defined as 6 months past last menstruation, (b) who were able to speak and/or read English, and (c) who self identified as Hispanic.. University of San Diego Internal Review Board approved this study. The participants signed written consent forms. Participants filled out the questionnaire packets, or family members were given the consents and questionnaires to give to

relatives who wanted to participate in the study. Consent forms and packets were either returned by hand or mailed back to the researcher.

The study instruments used to measure the independent variables were: Exercise Self-Efficacy questionnaire (Marcus, Selby et al., 1992); Stages of Exercise Change questionnaire (Marcus & Simkin, 1993); and HPLPII questionnaire (Carlson, 2000b; Walker et al., 1987). To measure the dependent variable of level of physical activity the IPAQ was administered (International Physical Activity Questionnaire Committee, 2004). BMI was measured by self-report on the demographic questionnaire, which included height and weight. BMI was calculated using SPSS 13.0 and classified according to CDC standards (Centers for Disease Control & Prevention, 2006). The scores of the questionnaires were correlated and further analysis was done to explore the six subscales of the HPLPII. The scores from the questionnaires were applied to the research questions.

.Descriptive statistics were generated including means, frequencies, and standard deviations of the research variables. The purpose of this research was a correlational study; therefore, a Pearson *r* correlation was used. Because of the significant correlation among the variables, a regression analysis was done beyond the research questions.

The study demographics of the postmenopausal Hispanic women participants included a mean age of 57 years, a mean age of menopause at 47.6 years, primarily self-identified as Hispanic (76.4%), married (62.2%), an annual income between $19,000 and $40,000 (45%), and some college and above (38.7%). Most were not caring at home for grandchildren (61.5%) or elderly parents (78.1%) but were working full time (63.5%) or part-time (36.5%). The majority participants country of birth was Mexico (47.3%) and

the United States (35.5%). While participants did not perceive their weight as limiting their activities, (78.2%) a third identified that their weight affected their health (37.8%). The BMI profile showed most participants in the obese category (36.9%) with the overweight category being second (34.2%). Participants listed between zero and six health problems with high cholesterol (38.7%), joint problems (34.2%), and high blood pressure (30.6) being the most prevalent problems.

The mean scores from the independent variables of exercise self-efficacy, stages of exercise change, and health promotion behaviors were presented. The exercise self-efficacy mean scores from Marcus and Selby's (1992) study were 19.71 for a population of younger men and 12.4 for those in the precontemplation stage. For the postmenopausal Hispanic women, the mean overall score was 12.17 with the precontemplation mean score being 11.5. Using a one sample t-test the overall scores for postmenopausal Hispanic women were significantly lower ($t = 16.324$, $p = < .001$): there was no difference in exercise self-efficacy scores when comparing precontemplation scores between these groups ($t = -.494$, $p > .05$). The participants in this study had the highest reported stage as maintenance, which is reflected in Bull's (2001) study in which Hispanic participants were also more in the action and maintenance stage, although older participants were more in the precontemplation stage. The level of activity demonstrated the majority of the participants were inactive (35.5%) to minimally active (21.5%), which is supported in the research literature (Anderson et al., 2001; Centers for Disease Control & Prevention, 2004; Manson et al., 2001; Wilcox et al., 2000).

In relation to the first research question, the level of physical activity (IPAQ) was significantly correlated to all of the independent variables, exercise self-efficacy ($r =$

.427, $p < .01$), stages of exercise change, ($r = .192$, $p < .05$), HPLPII ($r = .602$, $p < .01$). The findings for this population have not been previously reported in the literature, and will add to the body of knowledge, unique to postmenopausal Hispanic women.

The findings to the second research question demonstrated a significant inverse correlation of the research variables, exercise self-efficacy, stages of exercise change, health promotion behaviors, and levels of physical activity with BMI and health problems. This inverse relationship is supported in similar research with other ethnic populations (Barrett-Connor et al., 1996; Manson et al., 2001; Masse & Anderson, 2003; Shetterly et al., 1996).

The importance of these findings for nursing theory and empirical research knowledge development is first the support of the combined theoretical framework of the Transtheoretical model, the Health Promotion Model, and the importance of exercise self-efficacy. The findings are further significant in support of interdisciplinary research findings that identify the relationship among combined variables of exercise self-efficacy, stages of change, health promotion behaviors, health problems, BMI and levels of physical activity previously described in the research with the addition of understanding the variable relationship in this population.

While the sample in this study demonstrates high levels of inactivity, high BMI, and number of health problems, the examination of exercise self-efficacy, stages of exercise change, and health promotion behaviors in this population has not been undertaken in the literature. The value of identifying the interrelationships among these variables adds to knowledge of the factors that affect levels of physical activity in postmenopausal Hispanic women.

Research Limitations

The selection and gathering of study participants was nonrandom, which may be problematic to the external validity of the study. Occasionally participants preferred that the researcher or family member read the questionnaire to the participant, which may have decreased the internal validity of the questionnaire responses. One potential contributing factor to the frequency of monolingual individuals was that this age group could possibly be first generation immigrants with more limited acculturation such as language acquisition. The sample was gathered from a variety of settings and word of mouth. Occasionally, potential participants felt that the type of information asked was too personal and chose not to participant. Perhaps research which includes level acculturation may help to clarify cultural differences.

Conclusions

There is limited research addressing physical activity and Hispanic women. Further, a the review of the literature demonstrated a gap in specific quantitative research addressing exercise self-efficacy, stages of exercise change, and health promotion behaviors focused on postmenopausal Hispanic women, a population that is plagued by inactivity, subsequent weight gain, and obesity. It is not surprising that prioritized goals for Healthy People 2010 include addressing levels of physical activity and eliminating health disparities among segments of the population (Beato, 2004; Bolen et al., 2000; Centers for Disease Control & Prevention & President's Council on Physical Fitness & Sports, 2004). This study contributes to nursing knowledge concerning factors that influence physical activity levels in postmenopausal Hispanic women. Results revealed support for the relationships between psychosocial correlates, health promotion

behaviors, and level of physical activity. In addition, the results supported the contention of the research question that health problems and BMI are inversely related to the psychosocial correlates, health promotion behaviors, and physical activity particularly in this population.

From the research, the following conclusions were revealed:

1. The physical activity level of postmenopausal women is influenced by their exercise self-efficacy, stages of exercise change and health promotion behaviors. Therefore, encouraging each of these attributes may increase levels of physical activity. Likewise, increased levels of physical activity may improve exercise self-efficacy, stages of exercise change, and health promotion behaviors.
2. In the study population, a preponderance of obesity and overweight BMI categories presented, as well as, low levels of physical activity and numerous health problems. This study demonstrates the immense importance of addressing low levels of physical activity, which contributes to numerous health problems in postmenopausal Hispanic women.

Implications for Nursing Practice

The strong positive relationship found among the psychosocial correlates, health promotion behaviors, and levels of physical activity have clinical implications for nursing practice. In an effort to increase levels of physical activity, the relationship of the variables to levels of physical activity must be considered. While assessing the level of physical activity is important, the factors that influence physical activity are essential. Initially in the assessment of postmenopausal Hispanic women, the relationship of these

factors to physical activity are important in the effort to provide appropriate teaching, effective nursing interventions, and program development to promote these factors, which in turn influences levels of physical activity. In assessing these factors, nurses can determine which variables may need further teaching, encouragement, and management. To provide appropriate physical activity or exercise programs and health assessments, which are inclusive of the variables studied in this project, nurses will find these results useful. The study findings may offer health professionals support for a multifaceted approach to physical activity education and program development that is designed for Hispanic women.

The study results support the theoretical framework that, in turn, provides a model for nursing care that addresses physical inactivity. Nursing interventions directed towards strengthening those factors would potentially enhance physical activity levels. While, current research demonstrates that physical inactivity is a modifiable factor contributing to being obese and overweight, this research demonstrates that exercise self efficacy, stages of exercise change, and health promotion behaviors are variables that influence the level of physical activity in Hispanic women (Dubnov et al., 2003).

Recommendations for Future Research

The findings of this study leave some questions that future research may be able to answer. Because so many individuals were excluded due to language, replicating this study with tools in the Spanish language would provide helpful data for this population, as well as Spanish speaking research assistants to help support participants' questions. In addition, a study using larger numbers covering a broader geographic area would make the results more generalizable. If a larger study included both English and Spanish-

speaking Hispanic women, a comparison of the two groups would provide broader knowledge within this population.

Considering the interesting HPLPII subscale results consisting of a strong correlation between physical activity, spiritual growth, and stress management, further research into these variables may be warranted. There were no references found in the literature regarding the correlation between spiritual growth and physical activity. This research demonstrated a relationship among the two that warrants further attention. Because there is existing research on stress and exercise, but not specific to this population, further studies on these variables in postmenopausal women by ethnic group would be useful. Qualitative research exploring the spiritual and stress management practices associated with physical activity is warranted. Researchers may also consider the variable of acculturation and its relationship to stress and physical activity.

Evidence based research could be conducted in the area of interventions that facilitate improved exercise self-efficacy, improved stages of exercise change, and development of health promotion behaviors. Studies have shown how important these variables are, but research on interventions specific to increasing exercise self efficacy, health promotion behaviors and the stage of exercise change with Hispanic women could provide useful guidelines and protocols for education and program development. In addition, experimental research on implementing nursing interventions and enrolling participants in physical activity programs is needed.

Because of the growing problem of obesity and associated illnesses in older Hispanic women in the United States, research and interventions to address physical inactivity are vital. This research adds to the knowledge of factors that influence levels of

physical inactivity and can be used to help develop educational programs to increase physical activity. The research on these variables is unique to Hispanic women because it helps to provide a basis for modifying levels of physical activity, to improve quality of life, and decrease chronic health problems. These findings also help overcome the health disparity resulting from the lack of research on these variables in this population. With continued nursing research and collaborative multidisciplinary studies directed at culturally specific interventions the goals for physical activity in Healthy People 2010 will be possible.

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Appendix A

Exercise Self-Efficacy Questionnaire

How confident are you that you could exercise in each of the following situations...	1=not at all confident 2=slightly confident 3=moderately confident 4=very confident 5=extremely confident
1. When I am tired.	1 not at all confident 2 slightly confident 3 moderately confident 4 very confident 5 extremely confident
2. When I am in a bad mood.	1 not at all confident 2 slightly confident 3 moderately confident 4 very confident 5 extremely confident
3. When I feel I don't have time.	1 not at all confident 2 slightly confident 3 moderately confident 4 very confident 5 extremely confident
4. When I am on vacation.	1 not at all confident 2 slightly confident 3 moderately confident 4 very confident 5 extremely confident
5. When it is raining or snowing.	1 not at all confident 2 slightly confident 3 moderately confident 4 very confident 5 extremely confident

Appendix B

Stage of Exercise Behavior Questionnaire

1. I currently do not exercise.	1.	True	2. False
2. I intend to exercise in the next 6 months.	1.	True	2. False
3. I currently exercise *regularly*.	1.	True	2. False
4. I have exercised *regularly* for the past 6 months.	1.	True	2. False
5. I have exercised *regularly* in the past for a period of at least 3 months.	1.	True	2. False

Appendix C

HPLPII

DIRECTIONS: This questionnaire contains statements about your *present* way of life or personal habits. Please respond to each item as accurately as possible, and try not to skip any item. Indicate the frequency with which you engage in each behavior by circling:

N for never, **S** for sometimes, **O** for often or **R** for routinely

1. Discuss my problems and concerns with people close to me	N	S	O	R
2. Choose a diet low in fat, saturated fat, and cholesterol	N	S	O	R
3. Report any unusual signs and symptoms to a physician or other health professional	N	S	O	R
4. Follow a planned exercise program	N	S	O	R
5. Get enough sleep.	N	S	O	R
6. Feel I am growing and changing in positive ways.	N	S	O	R
7. Praise other people easily for their achievements.	N	S	O	R
8. Limit use of sugars and food containing sugar (sweets).	N	S	O	R
9. Read or watch TV programs about improving health.	N	S	O	R
10. Exercise vigorously for 20 minutes or more at least three times a week (such as brisk walking, bicycling, aerobic dancing, using stair climber).	N	S	O	R
11. Take some time for relaxation each day.	N	S	O	R
12. Believe that my life has a purpose.	N	S	O	R
13. Maintain meaningful and fulfilling relationships with others.	N	S	O	R
14. Eat 6-11 servings of bread, cereal, rice and pasta each day.	N	S	O	R
15. Question health professionals in order to understand their instructions.	N	S	O	R
16. Take part in light to moderate physical activity(such as sustained walking 300-40 minutes 5 or more times a week).	N	S	O	R
17. Accept those things in my life which I cannot change.	N	S	O	R
18. Look forward toward the future.	N	S	O	R
19. Spend time with close friends.	N	S	O	R
20. Eat 2-4 servings of fruit each day.	N	S	O	R
21. Get a second opinion when I question my health care provider's advice.	N	S	O	R
22. Take part in leisure time (recreational) physical activities (such as swimming, dancing, bicycling).	N	S	O	R
23. Concentrate on pleasant thoughts at bedtime.	N	S	O	R
24. Feel content and at peace with myself.	N	S	O	R
25. Find it easy to show concern, love and warmth to others.	N	S	O	R

26. Eat 3-5 servings of vegetables each day.	N	S	O	R
27. Discuss my health concerns with health professionals.	N	S	O	R
28. Do stretching exercises at least 3 times per week.	N	S	O	R
29. Use specific methods to control my stress.	N	S	O	R
30. Work toward long-term goals in my life.	N	S	O	R
31. Touch and am touched by people I care about.	N	S	O	R
32. Eat 2-3 servings of milk, yogurt, or cheese each day.	N	S	O	R
33. Inspect my body at least monthly for physical changes/danger signs.	N	S	O	R
34. Get exercise during usual daily activities (such as walking during lunch, using stairs instead of elevators, parking car away from destination and walking).	N	S	O	R
35. Balance time between work and play	N	S	O	R
36. Find each day interesting and challenging.	N	S	O	R
37. Find ways to meet my needs for intimacy.	N	S	O	R
38. Eat only 2-3 servings from the meat, poultry, fish, dried beans, eggs and nuts group each day.	N	S	O	R
39. Ask for information from health professionals about how to take good care of myself.	N	S	O	R
40. Check my pulse when exercising.	N	S	O	R
41. Practice relaxation or meditation for 15-20 minutes daily.	N	S	O	R
42. Am aware of what is important to me in life.	N	S	O	R
43. Get support from a network of caring people.	N	S	O	R
44. Read labels to identify nutrients, fats, and sodium content in packaged food.	N	S	O	R
45. Attend educational programs on personal health care.	N	S	O	R
46. Reach my target heart rate when exercising.	N	S	O	R
47. Pace myself to prevent tiredness.	N	S	O	R
48. Feel connected with some force greater than myself.	N	S	O	R
49. Settle conflicts with others through discussion and compromise.	N	S	O	R
50. Eat breakfast.	N	S	O	R
51. Seek guidance or counseling when necessary.	N	S	O	R
52. Expose myself to new experiences and challenges.	N	S	O	R

Appendix D
IPAQ

We are interested in finding out about the kinds of physical activates that people do as part of their everyday lives. The questions will ask you about the time you have spent being physically active in the **last 7 days**. Please answer each question even if you do not consider yourself to be an active person. Please think about the activities you do at work, as part of your house and yard work, to get from place to place, and in your spare time for recreation, exercise and sport.

Think about all the **vigorous** activities that you did in the **last 7 days. Vigorous** physical activities refer to activates that take hard physical effort and make you breathe much harder than normal. Think only about those physical activities that you did for at least 10 minutes at a time.

1. During the **last 7 days**, on how many days did you do **vigorous** physical activities like heavy lifting, digging, aerobics or fast bicycling?

____ days per week

☐ No vigorous physical activities → **Skip to question 3**

2. How much time did you usually spend doing **vigorous** physical activities on one of those days?

___ hours per day

___minutes per day

☐ Don't know/not sure

Think about all the **moderate** activities that you did in the **last 7 days. Moderate** activities refer to activities that take moderate physical effort and make you breathe somewhat harder than normal. Think only about those physical activities that you did for at least 10 minutes at a time.

3. During the **last 7 days**, on how many days did you do moderate physical activities like carrying light loads, bicycling ar a regular pace, or doubles tennis? Do not include walking.

____ days per week

☐ No vigorous physical activities → **Skip to question 5**

4. How much time did you usually spend doing **moderate** physical activities on one of those days?

___ **hours per day**

___**minutes per day**

☐ Don't know/not sure

Think about the time you spent **walking** in the **last 7 days.** This includes at work and at home, walking to travel from place to place, and any other walking that you might do solely for recreation, sport, exercise, or leisure.

5. During the **last 7 days**, on how many days did you **walk** for at least 10 minutes at a time?

____ **days per week**

☐ No walking ⟶ **Skip to question 7**

6. How much time did you usually spend **walking** on one of those days?

___ **hours per day**

___**minutes per day**

☐ Don't know/not sure

The last question is about the time you spent **sitting** on weekends during the **last 7 days**. Include time spent at work, at home, while doing course work and during leisure time. This may include time spent sitting at a desk, visiting friends, reading, or sitting or lying down to watch television.

7. During the **last 7 days**, how much time did you spend **sitting** on a **week day**?

___ **hours per day**

___**minutes per day**

☐ Don't know/not sure

This is the end of the questionnaire, thank you for participating.

Appendix E
Demographic Data

DIRECTIONS: Please circle the best response or write answers to the following questions:

1. What is your age:_____

2. Marital status:
1. Married
2. Divorced
3. Single
4. Widowed
5. Separated

3. Country of Birth:
1. US
2. Mexico
3. South America
4. Central America
5. Cuba
6. Spain
7. Caribbean
8. Puerto Rico

4. Ethnic Background:
1. Hispanic American
2. White
3. Other: _____

5. What is the highest grade you completed in school?
1. Grade 0-8
2. Grade 9-11
3. High School Graduate
4. Some College
5. College Graduate
6. Master's Degree
7. Doctorate

6. Where do you live?
1. Urban (city) _____
2. Suburban (near what city)_____
3. Rural (country) _____

7. What is the total amount of your family's annual income?
   1. Below $10,000
   2. Between $10,000-$18,000
   3. Between $18,000-$25,000
   4. Between $25,000-$30,000
   5. Between $30,000-$40,000
   6. Between $40000-$75,000
   7. Over $75,000

8. Last Menstrual Period: Month____ Year_____

9. At what age did you go through menopause?: _____

10. At Home do you care for:

    Grandchildren Yes No How Many?_____

    Elderly Parents or Relatives? Yes No How Many? _____

11. Including yourself, how many people live in your household? _____people

12. How close do your nearest relatives live to you : within 10 miles within 50 miles

13. How many children do you have? _____

14. What are your children's ages?
    1. 0-5 years
    2. 6-12 years
    3. 12-18 years
    4. 19 and over

15. What is your occupation?_____

16. Are you employed? 1. Full time
    2. Part-time

17. Weight: _____pounds

18. Height:_____feet_____inches

19. What was your dress size in high school?: _____

20. What is your current dress size?_____

21. Does your current weight limit your activities? 1. YES
2. NO

22. List activities you feel you are unable to do because of your weight:

1. _____
2. _____
3. _____
4. _____

23. Do you feel your weight is affecting your health? 1.Yes
2. NO
3. Describe how:

24. Do you currently have any health problems? 1. No
2. 1-2 health problems
3. more than 3 health problems

25. Circle any of these health problems which you have:

1. High blood pressure How long:___(years)
2. High blood sugar How long:___(years)
3. Pills for sugar How long:___(years)
4. Taking Insulin How long:___(years)
5. Heart Problems How long:___(years)
6. High Cholesterol How long:___(years)
7. High Triglycerides How long:___(years)
8. Heart attack How long:___(years)
9. Gallbladder Problems How long:___(years)
10. Breast Cancer How long:___(years)
11. Other cancer How long:___(years)
12. Joint Problems How long:___(years)
13. Movement problems How long:___(years)

Appendix F

Matrix of Literature Review on Physical Activity and Hispanic Women

#	Reference: Author & Title	Yea r	Design/ Article/ Framework	Independent Variables	Dependent Variables	# of Participants	Subject Characteristics	Setting	Instrument	Other	Results/ Discussion/Outcome
1.	(Sallis et al., 1988) The development of self-efficacy scales for health-related diet and exercise behaviors	1988	Psycho-metric development Bandura – self-efficacy framework			32 ♂ 8♀	Study I: 45 yr children living in household in the process of changing diet or PA patterns 40 participants 10 AA 10 Hispanic 20 white Study II: 171 participants students & staff				Self-efficacy scales for health related exercise and dietary behaviors were developed: They could potentially be used to study the effect of self-efficacy on changing dietary and exercise behaviors
2.	(Sallis et al., 1989) A multivariate study of determinants of vigorous exercise in a community sample	1989	Cross sectional Social Learning Theory Operant Learning Theory	Social Learning Theory variables, self-reported vigorous exercise	Exercise promotion	2053	1789 69% white 15% Hispanic 9% AA 7% Other San Diego randomized sample Community ♀♂		24 variables selected but name of scale not given-self-report by mail		• Strongest correlates were self-efficacy, perceived barriers to exercise, support from friends, age, dietary habits, and modeling • Modeling and support were the strongest correlates
3.	(Walker et al., 1990) A Spanish language version of the Health-Promoting Lifestyle Profile	1990	Health Promotion Model	Psycho-metric development of HPLPII Spanish version		485	Men and women; median age 25 yr.	Midwest	HPLPII		• Construct Validity Factor Analysis: Correlations among the 6 factors were below .32 (except 1), supporting English version findings – each factor represents a distinct dimension without being redundant • Reliability: Total scale high internal consistency .94; six subscales between .70 and .87 • Test retest @ 2 wks.

#	Reference: Author & Title	Year	Design/ Article/ Framework	Independent Variables	Dependent Variables	# of Participants	Subject Characteristics	Setting	Instrument	Other	Results/ Discussion/Outcome
											Pearson r = .87 total and .73-.85 for subscales
4.	(Yeager, Macera, & Merritt, 1993) Socioeconomic influences on leisure-time sedentary behavior among women	1993	Cross sectional	BRFSS	Women	32,852 1415 Hispanic	National sample				BRFSS outcome not conclusive for Hispanics
5.	(Sallis, 1994) Influences on physical activity of children, adolescents, and adults	1994	President's Council on Physical Fitness and Sports Bandura framework			Hispanics included					• ↓ levels of education & income associated with ↓ levels of PA in leisure time • Latinos less PA due to socioeconomic factors • Self-efficacy had significant effect on PA • Enjoyment was significant with PA • Social supports effect PA • Environments effect of PA, weather, TV computers, etc. • Supportive environments – safe and attractive
6.	(Barrett-Connor et al., 1996) Factors associated with glucose and insulin levels in healthy postmenopausal women	1996	Cross-sectional Medical framework		Plasma glucose levels & insulin levels	869	Postmenopausal White 755 AA- 32 Hispanic 47 ♀		Postmenopausal Estrogen/Progestin Interventions Study		• PA associated with insulin or glucose in age adjusted model • Hispanic women had higher fasting and 2° insulin levels than non-Hispanics
7.	(Shetterly et al., 1996) Self Rated Health among Hispanic vs. non Hispanic white adults	1996	Cross sectional No framework	Health indicators Socio-economic Cultural	Lower self rated health	429 Hispanic 583 non-Hispanic white	20-74 yr. 45% ♂ 55% ♀	Southern Colorado	Acculturalation scale	Secondary data from a study based on the San Luis Valley Diabetes Study, geographically-based, case controlled study Excellent work	• Hispanics were 3.4 times more likely as non-Hispanic whites to report fair or poor health • Vigorously active people were less likely to report fair or poor health in both ethnic groups
8.	(Warnecke et al., 1997) Improving question wording in surveys of culturally diverse	1997	Evaluating questionnaire for cultural bias from			423	18-50 yr. adults Equal numbers of AA, non- Hispanic white, Puerto				• Validity of questions about risk behavior could be improved • Use interviewers of same

#	Reference: Author & Title	Year	Design/ Article/ Framework	Independent Variables	Dependent Variables	# of Participants	Subject Characteristics	Setting	Instrument	Other	Results/ Discussion/Outcome
	populations		National Health Surveys' Theory of Survey response				Rican, Mexican American				racial group • Attend to order and eliminate redundancy • Test for racial bias before use
9.	(Elder et al., 1998) Socioeconomic indicators related to cardiovascular disease risk factors in Hispanics	1998	Exploratory No Framework	Socioeconomic status CVD risk factors	ESL Hispanic Students	341	49% ♂ 28 year avg. age	San Diego	Physiologic assessment: BP, HDL total cholesterol, Ht, Wt., hx. CVH, meds, Behavioral CVD Risk factors: fat intake, self-reported PA, ETOCH and smoking SES indicators: education, income, employment status, acculturation, years in the US and language ability Spanish	Secondary Data from a longitudinal study assess nutrition education for Hispanic ESL students	• ♀ had ↑ mod-to high weekly PA than ♂ • ↑ income was correlated with ↑PA • ♀were generally healthier than ♂
10.	(Eyler et al., 1998) Physical Activity and Minority Women: a Qualitative study	1998	Qualitative study *** No Framework		Identify patterns of PA in minorities	10 groups with 8-10 ♀ 80-100 ♀ groups: 1 Hispanic 2 Filipino 3 Chinese 2 Am Ind.	♀ older than 40		Focus groups		Codes Barriers Enablers: facilitated PA Benefits Activity Sources Recommendations Distinguish btwn PA and Exercise Cultural issues identified by role Personal barriers 2X as freq as environmental barriers Lack of Time

#	Reference: Author & Title	Year	Design/ Article/ Framework	Independent Variables	Dependent Variables	# of Participants	Subject Characteristics	Setting	Instrument	Other	Results/ Discussion/Outcome
											Health Concerns-make health worse Lack of self motivation; social network
11.	(Castro et al., 1999) A prospective study of psychosocial correlates of physical activity for ethnic minority women	1999	Experimental and Longitudinal SCT	PA intervention (walking time) using the Stanford walking kit	Psychosocial variables	128 ♀	65 intervention 63 control group 24-55 years old 58 Hispanic 53 AA 18 Asian/Pacific islander	San Diego	2 questions to assess walking 8 items for predictors of PA Family Friends Support for Exercise Habits Scales Self-efficacy Exercise Behavior Scales (adapted PA Enjoyment Scale -5 items adapted	17♀ dropped out of the intervention group and 4 from control group	• Intervention group did not do better than control group • possible frequent contact too invasive?? • Less enjoyment with ↑ PA • Other studies not generalizable to ethic ♀
12.	(Eyler et al., 1999) Physical activity social support and middle- and older-aged minority women: results from a US survey	1999	Exploratory 0 Framework	Social Support	PA in minority middle and older aged ♀	2912	AA, Hispanic, Am Indian/Alaskan & White	St. Louis	4 measures of PA PASS= PA Social Support		• Hispanic ♀had ↑ scores on PASS Limitation-acculturation makes it difficult to generalize results
13.	(Sternfeld et al., 1999) Physical Activity Patterns in a diverse population of women	1999	Cross sectional No framework	Demographic Psychosocial factors	PA-recreational; household/care giving; occupational	2636	Ethnic members of an HMO 211 Hispanics 20-65 yr. ♀	California	Baecke questionnaire-modified		• Employment, self-efficacy, and social support were positively associated with likelihood of participation in sports/exercise • Being Hispanic, married, young children, less than a college degree, time constraints for exercise were strongly related to being in the highest quartile of the household/care giving index

#	Reference: Author & Title	Year	Design/ Article/ Framework	Independent Variables	Dependent Variables	# of Participants	Subject Characteristics	Setting	Instrument	Other	Results/ Discussion/Outcome
14.	(Whitehorse et al., 1999) Culturally tailoring a physical activity program for Hispanic women: recruitment success of La Vida Buena's salsa aerobics	1999	Set up PA for Hispanic♀ Bandura influence 0 Framework								• Salsa Aerobics Program • Referral from friends most successful recruitment method • Limited outcome data • Emphasis at end of the study: Recruitment methods for exercise class
15.	(Bolen et al., 2000) State-specific prevalence of selected health behaviors, by race and ethnicity -- Behavioral Risk Factor Surveillance System, 1997	2000	Longitudinal SCT		Access to health care Health risk behaviors Etc.	Done in all 50 states	Whites AA Hispanics AI Asians	Done in all 50 states	Behavioral Risk Factor Surveillance Systems (BFRSS) yearly work	1997 year collected	• AA Hispanics AI more likely to report no leisure time PA • multiple findings- using only PA specific to interest for this study
16.	(Booth, 2000) Assessment of physical activity: An international perspective	2000	Assessment								• Describes international need for standardized scale • Difference btwn exercise and PA • Domains of PA: leisure time; gardening; household chores; transport; occupational • Seasonality • Classes of activity vs. specific actions
17.	(Brownson et al., 2000) Patterns and correlates of physical activity among US women 40 years and older	2000	Cross-sectional 0 Framework	Definitions of Pa Sociodemographic Behavioral correlates	PA in minority ♀	2912	AA 769 AI/Alaskan Native 738 Hispanic 660 White 769		Modified with other questionnaires BRFSS Behavioral Risk Factor Surveillance		• ↑ levels of PA when occupational activity rather than traditional assessment of leisure activity were used
18.	(Carlson, 2000a) A case study Health Promoting Lifestyle Profile II: Spanish language translation development and testing	2000	Psychometrics Health Promotion Model	Spanish version	HPLPII	60 bilingual	Self-reported Hispanic individuals	Texas	HPLPII		• Alpha Reliability English version= .83 and Spanish version .80PA, interpersonal relations and stress management have no statistically significant differences on each item

#	Reference: Author & Title	Year	Design/ Article/ Framework	Independent Variables	Dependent Variables	# of Participants	Subject Characteristics	Setting	Instrument	Other	Results/ Discussion/Outcome
19.	NOT NUMBERED BECAUSE RESEARCH IS ON CHILDREN (Johnson et al., 2000) A transactional model of social support, self-efficacy, and physical activity of children in the child and adolescent trial for cardiovascular health	2000	Bandura SCT Longitudinal	Self-efficacy Positive social support in 3rd grade	Predict PA in 5th grade → 7th grade	2698	Children Caucasian AA Hispanic				• attitudes influence behavior and the model was supported
20.	(Heesch et al., 2000)Perceived barriers to exercise and stage of exercise adoption in older women of different racial/ethnic groups	2000	Cross sectional	Stage of Ex.	Ethnic groups	29123	660 Hispanic 745 AA 738 Am Ind 769 Caucasian	40-93 years old	Stages of Exercise scale Barriers-adapted scale from San Diego Health and Exercise Survey	EXCELLENT TABLES	• Identified barriers in each stage of change • 10 barriers used • Hispanics: • PC- barrier bad health and afraid of injury • C-lack of time and too tired • P/AC-lack of energy and being discouraged • Stage tool may not be culturally sensitive ***
21.	(King et al., 2000)Personal and Environmental factors associated with physical inactivity among different racial-ethnic groups of US middle aged and older women	2000	Cross sectional/longitudinal Bandura SCT	SCT variables: sociodemographic, health related, psychosocial, program based and environmental	Level of leisure time or household related PA	2912	22 % Hispanic 25% AA 26 %White 25% Am Indian				• Hispanic women ranked self consciousness about physical appearance as second barrier to PA • Hispanic: ↓ education ↓ PA; more discouragement ↓ PA; ↑fatigue ↓ PA; presence of hills associated with being more active
22.	(Wilcox et al., 2000)Determinants of leisure time physical activity in rural compared with urban older and ethnically diverse women in the United States	2000	Cross sectional SCT Ecological Theory	Determinants of leisure time PA (LTPA)	Urban Rural	2912	40 yr and older 447 Hispanic 599 White 738 AA 654AM. Indian	National	Adapted questions from BRFSS and National Health Interview Survey developed with 92 questions		• Hispanic high sedentary rate • Rural ♀ more sedentary then urban ♀ • Rural ♀>barriers to LTPA than urban; care giving most common barrier

#	Reference: Author & Title	Year	Design/ Article/ Framework	Independent Variables	Dependent Variables	# of Participants	Subject Characteristics	Setting	Instrument	Other	Results/ Discussion/Outcome
23.	(Anderson et al., 2001) Obesity and reports of no leisure time activity among older Americans: Results from the Third National Health and Nutrition Examination Survey	2001	Cross sectional No framework	LTPA	BMI including minorities	6596	60 yr and older Hispanic AA	National	LTPA survey including 4 open ended questions	2ndary data form NHANES III	• AA & Hispanic are more likely to report no LTPA in all BMI categories • Obese older adults more likely than overweight & healthy weight adults to report no LTPA
24.	(Bull et al., 2001) Stages of readiness to exercise in ethically diverse women a U.S. survey	2001	Cross sectional Transtheoretical model	Stages of exercise readiness	Ethnicity	2912 603 Hispanic 702 White 659 Black 656 AI/Alaskan Native	40 year and up Telephone survey		BRFS Questions plus 92 item questionnaire from BRFSS and National Health Interview Survey? Similar to King study??	1998 year collected	• Hispanic more in, action and maintenance • Older women more in Precontemplation stage • ♀ more likely to be in Precontemplation if higher BMI • 55% in maintenance stage (higher than normal)question of misclassification
25.	(Manson et al., 2001) Ethnic, socioeconomic, and lifestyle correlates of obesity in U.S. women: the Women's Health Initiative	2001	Cross-sectional No Framework	BMI Educational level Income Lifestyle factors	Ethnicity	98,705	50-79 yr.♀ 98,705 3,375 Hispanic 8562 AA 82762 White Asian and Am. Indian		Women's Health Initiative		• being Hispanic was a predictor of obesity • Being Hispanic also a predictor of ↓ ed; ↓ income; ↑ parity, ↑ sedentary lifestyle
26.	(Marshall & Biddle, 2001) The transtheoretical model of behavior change: a meta-analysis of applications to physical activity and exercise	2001	Meta-analysis	Stages of change (readiness); process (Experiential and Behavioral) core constructs applied to PA, exercise or both		91 articles (10 conference abstracts)	Varied NO MENTION OF ANY ETHNICITY IN ANY STUDY****	International			• Effect of SE across stage transition was positive and significant • Behavioral pros-effect estimates were significant and positive (except for contemplation and preparation • Behavioral cons-all effect estimates were small to moderate, significant, suggesting that the perceived disadvantages of becoming physically active decrease across the

#	Reference: Author & Title	Year	Design/ Article/ Framework	Independent Variables	Dependent Variables	# of Participants	Subject Characteristics	Setting	Instrument	Other	Results/ Discussion/Outcome
											stages. • Noted problem with numerous tools to measure staging • Problem with tools construct validity
27.	(Melillo et al., 2001) Perceptions of older Latino adults regarding physical fitness, physical activity, and exercise	2001	Qualitative	Perception towards PA, physical fitness and exercise		18	60 yr and older ♀	Massachu setts	Focus Groups Interview guide include in article		• Participants in all groups viewed PA and exercise interchangeably • PA=benefits physically and psychologically • Exercise for the young • over 60 time to rest • fear of health problem could be made worse with PA • Support & motivation facilitate PA • Own place culturally and age specific • Nurses seen as helping to motivate and support Latinos in PA programs • Value of ones bringing up on PA • Barrier-fear of feeling inappropriate • Fear of adverse effect on health • monitoring exercise considered important • Fitness viewed positively and exercise potentially detrimental where specific health problems exist • *Nurses serve as cultural links to community resources

#	Reference: Author & Title	Year	Design/ Article/ Framework	Independent Variables	Dependent Variables	# of Participants	Subject Characteristics	Setting	Instrument	Other	Results/ Discussion/Outcome
28.	(Robbins et al., 2001) Physical activity research in nursing	2001	Analysis of research in nursing on physical activity SCT Theory of planned behavior; transtheoretical model and Pender HPM				Varied with some ethnic attention; no numbers				• 7 Recommendations for future research on physical activity
29.	(D'Alonzo, 2002) Effects of an intervention to enhance exercise self-efficacy among Black and Hispanic college-age women	2002	Quasi-experimental interventional	Self perception of body size,	Exercise fitness	44	AA Hispanic College Students***	?NJ	Self-efficacy and Exercise Habits Survey Exercise Benefits/Barriers Scale Digiwalkers		• exercise intervention resulted in significant improvements in fitness and exercise self-efficacy
30.	(Eason, Masse, Kelder et al., 2002) Diary days needed to estimate activity among older African-American and Hispanic women	2002	Testing 7 day diary No framework			227	111 AA 116 Hispanic	Tx	Women on the Move	Generalizability theory?	• More than 7 day for AA & Hispanic women • certain types of activity can be reliability est. in less than 7 d • results not that useful
31.	(Eason, Masse, Tortolero et al., 2002) Type A behavior and daily living activity among older minority women	2002	Exploratory No framework	PA Total activity Activity at work Exercise Household chores Leisure activity inactivity	Type A behavior	227	111 AA 116 Hispanic	Tx	Women on the Move		• excellent list of PA addressed • positive association between Type A and daily living activity; • model did not reveal meaningful associations-
32.	(Eyler, Wilcox et al., 2002) Correlates of physical activity among women from diverse racial/ethnic groups	2002	Research analysis, literature review Ecological			91 articles	White AA AI Asian Hispanic Women only			Good stats	• Ecological model including environment to organize correlates • most correlates were sociodemographic, lower ed, older age associated

#	Reference: Author & Title	Year	Design/ Article/ Framework	Independent Variables	Dependent Variables	# of Participants	Subject Characteristics	Setting	Instrument	Other	Results/ Discussion/Outcome
			model included policy /environment								with ↓levels of PA • Few studies on environment or policy correlates • social support overwhelmingly positive for PA Further research evaluate modifiable factors, such as psychological, interpersonal &environmental ☺
33.	(Eyler, Matson-Koffman et al., 2002a)Environmental, policy, and cultural factors related to physical activity in a diverse sample of women: the Women's Cardiovascular Health Network Project--introduction and methodology	2002	Qualitative	Data to design a structured quantitative instrument 1> to validate qual results with larger # of ♀ 2. determine if factors identified predict PA level 3. provide info on factors amenable to change and thus potential targets for intervention		305 49 Hispanic white AA AM Indian					***SCALE INCLUDED IN APPENDIX Purpose to help identify cultural, environmental, and policy factors as potential barriers or enablers pf PA
34.	(Eyler, Matson-Koffman et al., 2002b)Environmental, policy, and cultural factors related to physical activity in a diverse sample of women: The Women's Cardiovascular Health	2002	Qualitative			305 49 Hispanic white AA AM Indian			Focus group questions included		▪ Environmental barrier factors related to PA Social support Cultural factors Physical Policy ▪ Suggestions given for PA interventions

#	Reference: Author & Title	Year	Design/ Article/ Framework	Independent Variables	Dependent Variables	# of Participants	Subject Characteristics	Setting	Instrument	Other	Results/ Discussion/Outcome
	Network Project--summary and discussion										
35.	(Evenson et al., 2002) Environmental, policy, and cultural factors related to physical activity among Latina immigrants	2002	Qualitative			49 Hispanic				***EXCELLENT WORK	• Estimates by 2010 Latinos will be largest minority group in The US • By 2050 one in 4 Americans will be Latino • Definition of Hispanic (including other countries of origin) • Environmental and Policy Correlates Transportation Lack of Facilities Cost Safety ▪ Sociocultural Correlates Gender Roles for Activity Importance of Family Husband support Child Care Language Isolation in the community ▪ Interventions Provided
36.	(Juarbe et al., 2002) Perceived benefits and barriers to physical activity among older Latina women	2002	Qualitative	Perceived benefits and barriers to PA		143	40-79 years ♀	CA	Majority of interviews conducted in Spanish Acculturation tool 7 day Physical Recall	Funding: Resource Center for Minority Aging Research from National Institute on Aging, NINR and Office on Minority Health	• Barriers are more of an issue than benefits are • Barrier themes: Time constraints, roles, personal health, internal factors and external factors ▪ General misunderstanding of the role of PA and health conditions ▪ Unique finding: perceived benefits of PA mostly focused on how PA improves the roles of Latina ♀within the context of the family

#	Reference: Author & Title	Year	Design/ Article/ Framework	Independent Variables	Dependent Variables	# of Participants	Subject Characteristics	Setting	Instrument	Other	Results/ Discussion/Outcome
											▪ 91% felt that PA led to personal health promotion benefits in themes of health promotion, improved roles and physical fitness
37.	(Merck Institute of Aging & Health & Gerontological Society of America, 2002)The state of aging and health in America	2002	National Report Care including PA state by state to meet targets for Healthy People 2000				Minorities not singled out				• 70% of physical decline occurs related to modifiable factors including PA • 35% Americans physically inactive
38.	(Suminski & Petosa, 2002) Stages of change among ethnically diverse college students	2002	Cross sectional Transtheoretical model	Stages of change	Ethnicity	3099 college students	ages 17-58 White ♀ 486 ♂ 253 Hispanic 210 ♂ 325♀	Ohio	Self-report PA Questionnaire Stage of change question		• Hispanic ♀ more likely to be in nonexercisers stage • Questions about misclassification
39.	(Trost et al., 2002) Correlates of adults' participation in physical activity: review and update	2002	Literature Review								• Excellent review: all pertinent original research publications in relationship to Hispanic participants included in matrix review
40.	(Amesty, 2003) Barriers to physical activity in the Hispanic community	2003	Article written on the review of the literature No framework								• 4 sections: 1. definition of PA 2. Review of individual and community factors 3. Impact of place of residency as an environmental and structural barrier on PA 4. Examine existing interventions for PA
41.	(Andersen, Crespo, Franckowiak, & Walston, 2003) Leisure-time activity among older U.S. women in relation to hormone-replacement-therapy initiation	2003	Cross-sectional No framework	PA	Race and HRT	3479	60 + yr.♀ Hispanic-no # given		NHANES III	1988-1994 Data collected	• physical inactivity using HRT 28.5% • physical inactivity NOT using HRT 40 % • Mexican American and AA ↑ inactivity than white

#	Reference: Author & Title	Year	Design/ Article/ Framework	Independent Variables	Dependent Variables	# of Participants	Subject Characteristics	Setting	Instrument	Other	Results/ Discussion/Outcome
42.	(Conn, Minor et al., 2003) Integrative review of physical activity intervention research with aging adults	2003	Review of randomized controlled trials to ↑ PA in aging adults SCT= 7 studies and transtheoretical model			1960-2000 42 studies Limited minority studies					• common methodological weakness • common interventions were self monitoring, education, goals setting, supervised at centers, problem solving, feedback, reinforcement, relapse prevention
43.	(Evenson et al., 2003) Test-retest reliability of a questionnaire on physical activity and its correlates among women from diverse racial and ethnic groups	2003	Ecological model	Psychosocial correlates: Self-efficacy; sense of community; social issues; physical environment; Instrument development	Physical activity	344	White; Latina, AA and Native American women aged 20-50 yr,	Rural and Urban US			• Reliability for PA 0.69; ICC 0.30 to 0.95 across sites; self-efficacy for ex (0.72; 95% CI, 0.66-0.77) • Test retest varied from 0.84 for sidewalks to 0.44 for crime • Test retest for Self-efficacy was 0.72 overall
44.	(Eyler et al., 2003) Quantitative study of correlates of physical activity in women from diverse racial/ethnic groups: Women's Cardiovascular Health Network Project--introduction and methodology	2003	Ecological model	Psychosocial correlates: Self-efficacy; sense of community; social issues; physical environment; Instrument development	Physical activity						• Introduction to the Women's Cardiovascular Health Network Project. Survey • Appendix included women and Physical Activity Survey
45.	(Hulme et al., 2003; Hutchfield, 1999) Health-promoting lifestyle behaviors of Spanish-Speaking Hispanic adults	2003	Cross Sectional Descriptive Health Promotion Model	Health promoting lifestyle behaviors in Spanish speaking Hispanics Differences in behaviors and	Health promoting lifestyles	541 adults	1881 years all Hispanic 57% men	Midwest, Nebraska	HPLPII II Spanish Language version		• HPLPII areas scores were lowest in PA and highest for spiritual growth

#	Reference: Author & Title	Year	Design/ Article/ Framework	Independent Variables	Dependent Variables	# of Participants	Subject Characteristics	Setting	Instrument	Other	Results/ Discussion/Outcome
				acculturation Perceived health status, demo and acculturation							
46.	("Improved Nutrition and Physical Activity Act, H.R. 716, 108 Cong.,," 2003)	2003	Not Research-Legislation								• Recognizes problems associated with obesity: CAD, DM and Ca: works to encourage better nutrition and increase PA
47.	(Masse & Anderson, 2003) Ethnic differences among correlates of physical activity in women	2003	Cross Sectional SCT Theory of Reasoned Action Health Belief Model	PA correlates Belief of value of PA Normative modeling Perceived barriers Outcome expectations Self-efficacy	Ethnicity Education and income	246	AA 130 Hispanic 130 40-70 yr. ♀	Tx	Secondary date from Women on the Move Correlates of PA Questionnaire Self-efficacy Measure Stage of PA Behavior	Inter con: .78-.89 .98 .76-.78	• ethnicity differences by education and income associated with PA
48.	(Voorhees & Rohm Young, 2003) Personal, social and physical environmental correlates of physical activity levels in urban Latinas	2003	Cross sectional Mentioned SCT and social ecologic approach	Social and physical environmental factors Sociodemographic	PA levels	285	♀ 20-50 years (mean age 31) 43% Spanish speaking	Northern Virginia	Women and Physical Activity Survey Developed from qual research PA items based on BRFSS survey questions		▪ 40% inactive ▪ trend ♀ with college ed more likely to meet national PA recommendations ▪ SE trends more likely to be active if more confident ▪ No physical environmental influences significantly relation to activity recommendations ▪ Unattended dogs neg effected PA ▪ If neighborhoods safe more likely to be active ▪ Excellent ideas to help interventions in the community and at work (Table 4)

#	Reference: Author & Title	Year	Design/ Article/ Framework	Independent Variables	Dependent Variables	# of Participants	Subject Characteristics	Setting	Instrument	Other	Results/ Discussion/Outcome
49.	(Wilbur et al., 2003) Correlates of physical activity in urban Midwestern Latinas	2003	Cross Sectional No framework	Personal, social, environmental and physical environmental correlates	PA	300	20-50 years Mean age 32 242 Spanish 58 English		Face to face interviews Women and Physical Activity Survey developed from 42 focus groups PA- BRFSS question Acculturation scale Social Issues Scale Social Roles Scales		• ♀ with SE were nearly 6X more likely to report PA • ♀ who reported that they see people exercise in their neighborhood more than 2.5X likely to meet PA recommendations • ♀ who attended church were more PA than those who did not • Ideas suggested for interventions-more exercise facilitates
50.	(Allison & Keller, 2004) Self-efficacy intervention effect on physical activity in older adults... including commentary by Riesch SK, Resnick B, and Powell-Cope GM with author response	2004	Experimental SCT	Nursing Self-efficacy coaching intervention	PA Self-efficacy post cardiac event	83	65- 809 year with CHD and Cardiac rehab 69% ♂ 31% ♀ 81% white 16% Hispanic but no ethnic analysis		Self-efficacy expectation Scale PA Scale for Elderly 6 minute walk test		Intervention did not show a direct effect on level of PA self-efficacy but indirect interaction on distance and PA confidence • Relationship btwn SE and distance walked significant • ↑ SE→ ↑ Distance walked • coaching group ↑ SE after 12 weeks ▪ ↓LTPA ↓ moderate activity ▪ ↓ vigorous activity
51.	(Centers for Disease Control & Prevention, 2004)										
52.	(Marquez et al., 2004) Psychosocial correlates and outcomes of physical activity among Latinos: A review	2004	Literature Review		PA Hispanic	21 studies	Selection Criteria 1. Portion of sample Latino/Hispanic 2. PA rates reported in study included a PA intervention 3. psychosocial correlates were ID in outcomes of PA 4. sample was				Six Categories of psychosocial correlates and outcomes 1. Self-efficacy-significant correlate-↑→↑ PA 2. Social support-↑ social support →↑ PA 3. Perceived barriers: rural ↑ # barriers; urban ♀most freq. barrier time and energy; Several qual

#	Reference: Author & Title	Year	Design/ Article/ Framework	Independent Variables	Dependent Variables	# of Participants	Subject Characteristics	Setting	Instrument	Other	Results/ Discussion/Outcome
							older adults 5. or the study was qualitative in nature				studies on barriers 4. Depression, anxiety and stress: few studies on minorities and these correlates with PA 5. Attitudes towards PA: Theory of Planned Behavior-little study on minorities 6. Normative beliefs: Theory of Planned Behavior-little study on minorities Levels of Acculturation are important to include; one ethnic group instead of several; Spain speaking Latinos; subcultures of Latinos; measurements of PA Cultural understanding –no Hispanic concept of "leisure time" Little change in past decade
53.	(Beato, 2004) Healthy People 2010 Progress Review Focus Area 22: Physical Activity and Fitness										
54.	(Centers for Disease Control & Prevention & President's Council on Physical Fitness & Sports, 2004)										Goals and Objectives for PA for 2010
55.	(Vaughn, 2004) Factors influencing middle-aged and older Latin American women's participation in physical activity	2004	Qualitative			25	40-85	Homes, offices of participants	13 open ended questions		Factors that facilitators: decreased stress; feeling good, sense of well being, health benefits, accessible programs Barriers illness, pain, fatigue, embarrassment, lack of self motivation, worry

Appendix G

Recruitment Flyers

Are you a Hispanic or Latina woman 50-65 years of age?

If so please join us and participate in a study on physical activity and postmenopausal women. You will be asked only to fill out several surveys.

If you would like to participate in filling out some surveys please call Pam Kohlbry at 760-505-1944 to set up a time.

For your filling out the surveys you will be entered in the $50 Vons shopping certificate drawing

Please call Pam Kohlbry at 760-505-1944 to set up a time.

Appendix H

Informed Consent

Consent Form to Interview Participants:
Dissertation Pam Kohlbry

CONSENT TO BE AN INTERVIEW PARTICIPANT

A. Purpose and Background

Pam Kohlbry, RN, PhDc, a student in the Doctorate of Nursing Program, University of San Diego, is conducting research with postmenopausal women about physical activity. This research is designed to examine different aspects of women's participation in physical activity Participants will be asked answer 5 questionnaires about their health, their health related practices and physical activity.

B. Procedures

If I agree to participate in this research project, the following will occur:

1. I will be given a chance to ask questions about the questionnaires and process before I am asked to sign this consent form.
2. I will be interviewed at a place that is convenient to me. The interview will take about 60 minutes. If I get tired, bored, uncomfortable, or for any other reason, I can ask that the interview be stopped or completed later.
3. I will receive a copy of the informed consent paper that I sign. The researcher will destroy all notes and tapes at the end of the class in May 2005.

C. Risks and Discomforts

1. If some questions on the questionnaire make me feel uncomfortable, I am free to stop the interview at any time. Also, I can refuse to answer any question.
2. Questionnaire records will be kept confidential.
3. A code will be use on the questionnaires. My name and any information about my identity will NOT appear on questionnaires. Questionnaires records will be kept in the locked files of the student. Only the student, a research assistant or statistician, and /or dissertation committee members will see be able to see the completed questionnaires.
4. Answers to all coded questionnaires will be kept as confidential as possible.
5. I understand that there is no agreement, written or verbal, beyond that expressed in this consent form.

6. I will be given a copy of this consent form.

D. Benefits

There will be no direct benefit to me from participating in this research project. I will receive a Post-Menopausal Health Information Handout (regarding diet and physical activity)
The anticipated benefit of this research is that it will contribute to the body of knowledge on postmenopausal women's physical activity.

E. Questions

I have talked with the researcher about this assignment and I have had my questions answered. If I have further questions I can call Pam Kohlbry at _____ or, at the Hahn School of Nursing and Health Science at 619-260-7481

I, the undersigned, understand the above explanations and on that basis, I give my consent to my voluntary participation in this educational assignment.

---------- ----------
Signature of Participant Date

Location (e.g., San Diego, CA)

---------- ----------
Signature of Person Obtaining Consent Date

---------- ----------
Witness Date

Appendix J

Letter of Permission for Use of Self-Efficacy Instrument

and Stages of Exercise Change Instrument

The Miriam Hospital
A Lifespan Partner

BROWN MEDICAL SCHOOL

The Centers for Behavioral and Preventive Medicine

The CORO Building
Suite 500
One Hoppin Street
Providence, RI 02903
Tel 401 793-8000
Fax 401 793-8056

April 27, 2006

Pam Kohlbry, PhDc, RN
1980 Falling Leaf Ct.
San Marcos, CA 92078

Dear Pam:

This letter grants you permission to use and reprint Dr. Bess Marcus' exercise self-efficacy and stage of exercise change instruments for research purposes only. Dr. Marcus requests that in any presentation, manuscript, or written material, the original instruments should be cited appropriately. Good luck with your dissertation. We wish you much success!

You may also want to purchase her book entitled, *Motivating People to Be Physically Active,* which is published by Human Kinetics and available at www.humankinetics.com. The book includes all the measures she developed along with their theoretical foundations and scoring. The book also includes information on conducting interventions with various populations.

Again, thank you for your inquiry and interest.

Sincerely,

Shira Gray
Executive Assistant
Centers for Behavioral & Preventive Medicine
The Miriam Hospital
Coro Building, Suite 500
One Hoppin Street
Providence, RI 02903

Appendix K

Letter of Permission for Use of HPLPII Instrument

University of Nebraska Medical Center

NEBRASKA'S HEALTH SCIENCE CENTER
A Partner with Nebraska Health System

COLLEGE OF NURSING
Gerontological, Psychosocial, & Community Health Nursing

Dear Colleague:

Thank you for your request and payment to use the *Health-Promoting Lifestyle Profile II.* As indicated in the enclosed form, you have permission to copy and use the enclosed *Health-Promoting Lifestyle Profile II* for non-commercial data collection purposes such as research or evaluation projects provided that content is not altered in any way and the copyright/permission statement at the end is retained. The instrument may be reproduced in the appendix of a thesis, dissertation or research grant proposal without further permission. Reproduction for any other purpose, including the publication of study results, is prohibited without specific permission.

We thank you for your interest in the *Health-Promoting Lifestyle Profile II* and wish you much success with your efforts.

Sincerely,

Susan Noble Walker, EdD, RN, FAAN
Professor and Chair,
Department of Gerontological, Psychosocial and Community Health Nursing

Encl.: Health-Promoting Lifestyle Profile II
Scoring instructions
List of publications reporting use of the original Lifestyle Profile

985330 Nebraska Medical Center / Omaha, NE 68198-5330 / 402-559-6382 / FAX: 402-559-6379 / www.unmc.edu